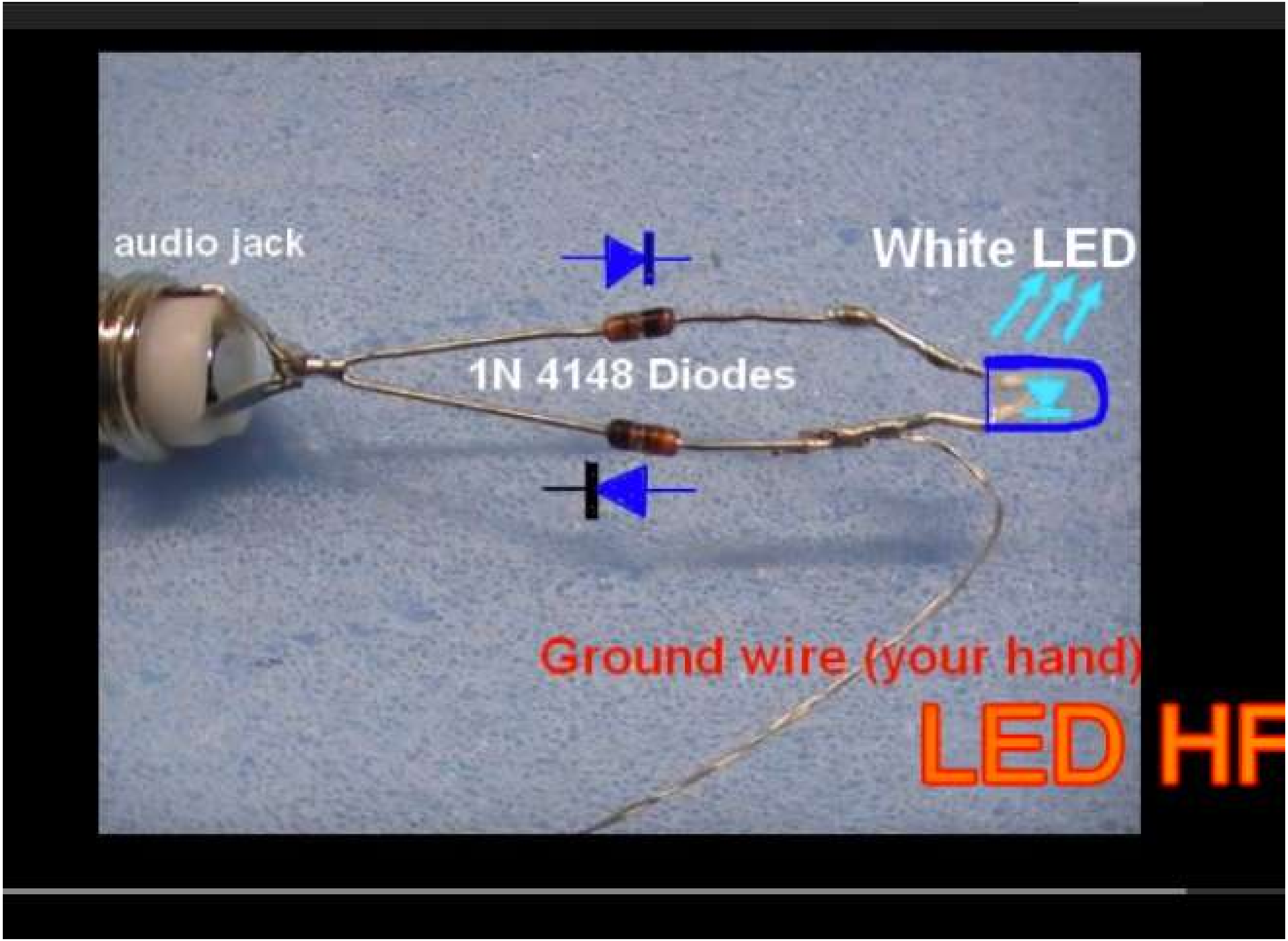
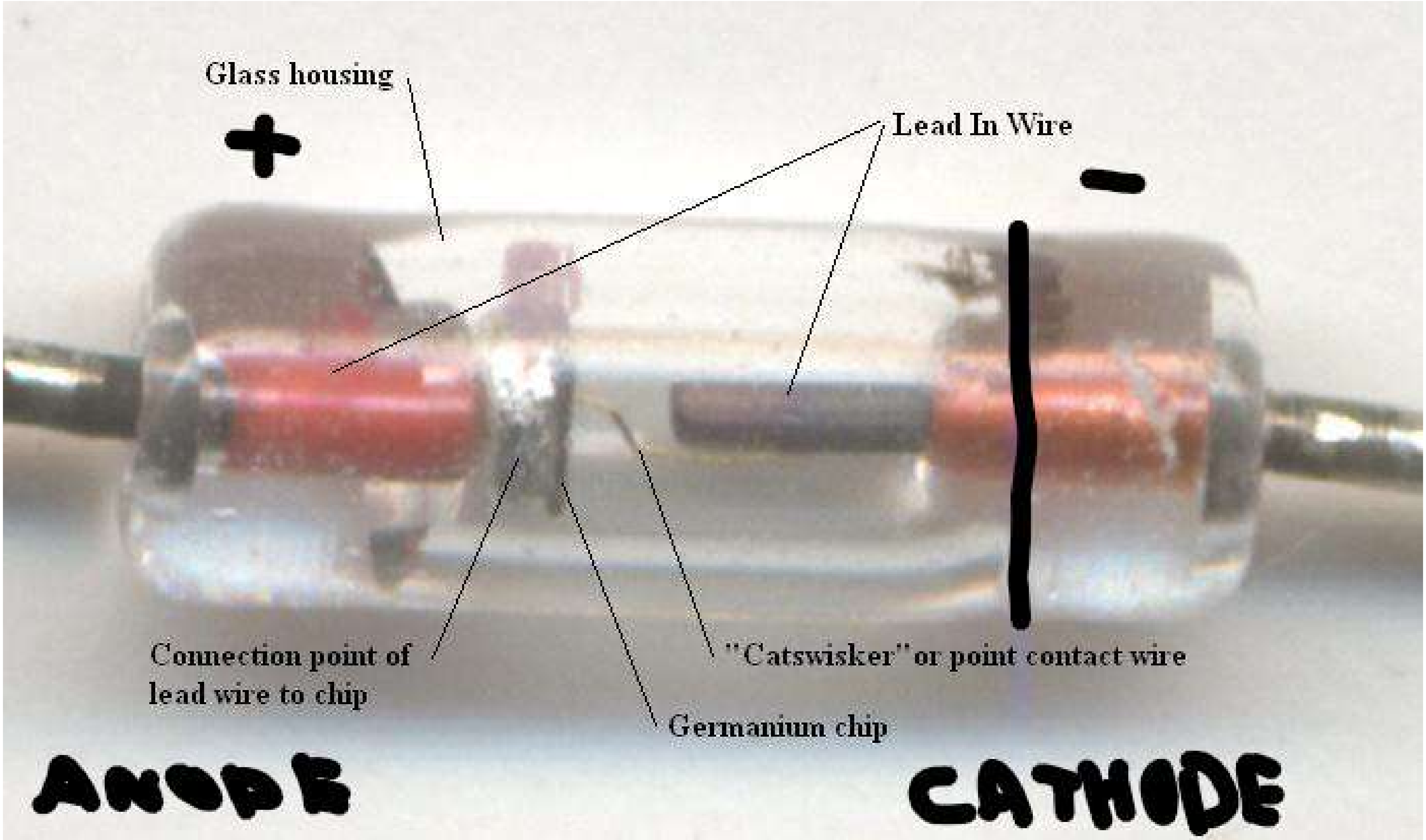
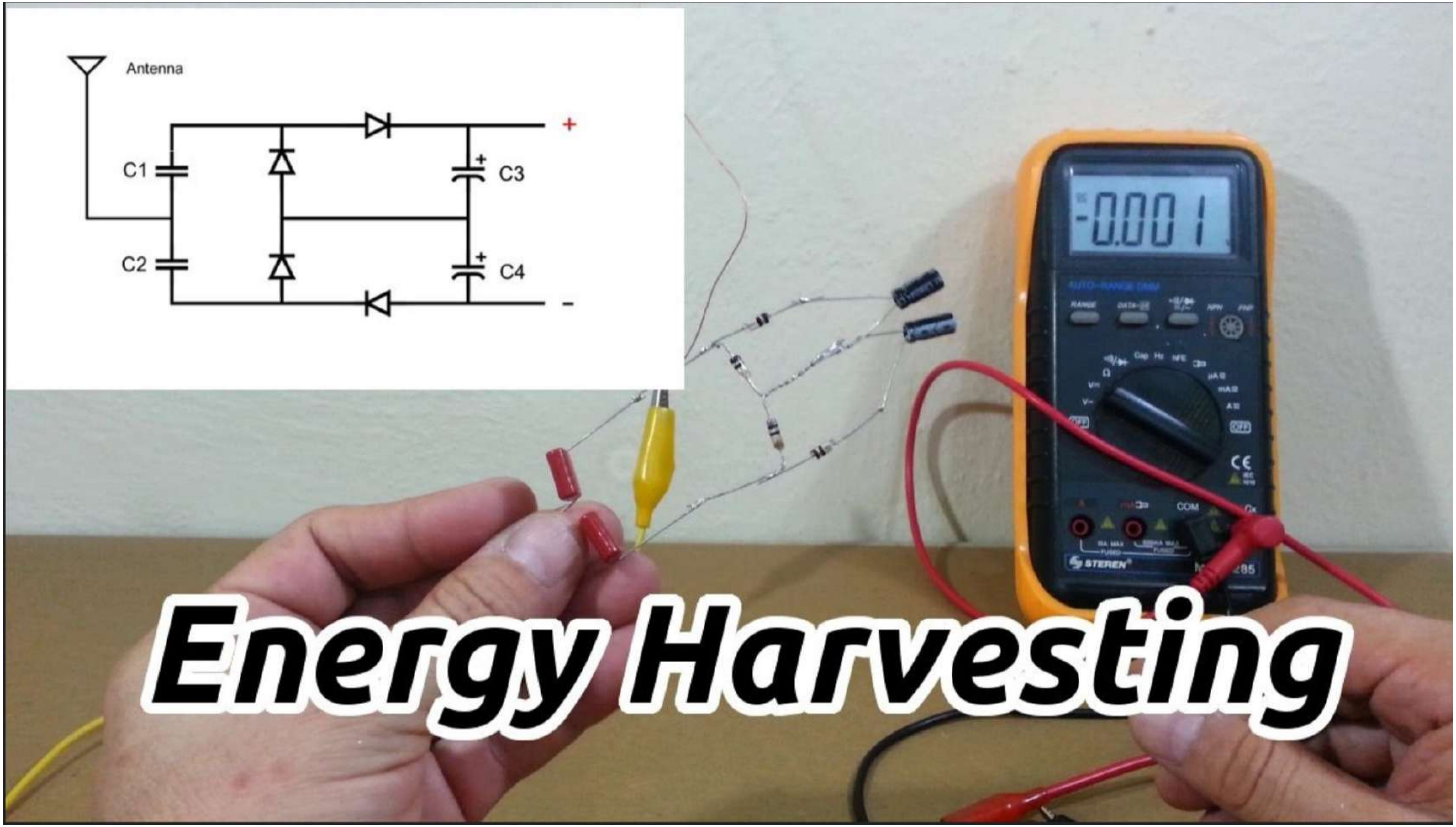

Min/Max:
Beeps when a new min/max observed while calculating running average
AC Voltage
Shift: Frequency Counter
DC Current
AC Current
Shift: Frequency Counter
Shift Key:
Use to access the yellow labeled features
Screen Backlight:
Auto-off in 40 sec.
DC Voltage
Millivolts for AC
Shift: Millivolts for DC
Ohmmeter Setting
Continuity Beeper
Diode Test
Shift: Capacitometer
Ammeter Terminal
Common Ground (COM)
Everything but Ammeter Terminal
FLUKE
600.0
OFF
A
COM

electricity from radiowaves 3


audio jack
White LED
1N 4148 Diodes
Ground wire (your hand)
LED HF

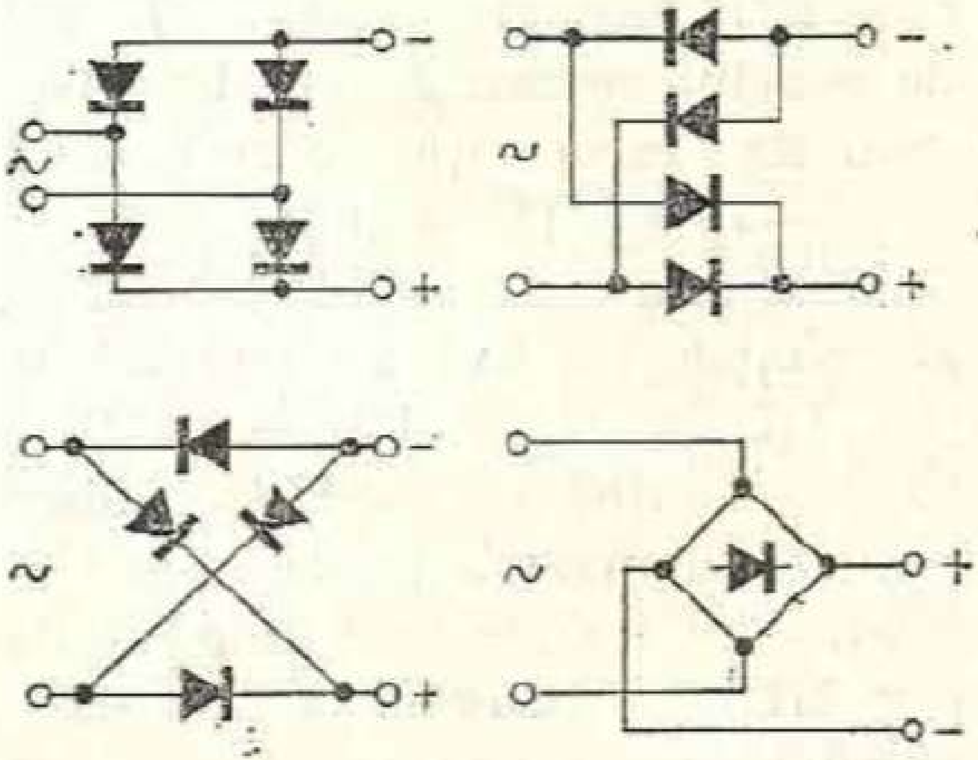

Glass housing
+
Lead In Wire
-
Connection point of
lead wire to chip
"Catswisker" or point contact wire
Germanium chip
ANODE
CATHODE


Antenna
C1
C2
C3
C4
+
-
-0.001
Energy Harvesting

feluri (fig. III.9), schemele fiind echivalente cu reprezentarea de bază din fig. III.8. Diodele sînt legate în serie, în formă de patrulater, două avînd comun anodul (punctul *2*), iar celelalte două catodul (punctul *4*). Tensiunea alternativă de intrare se aplică pe diagonala *1—3*, iar consumatorul se conectează pe diagonala *2—4*.

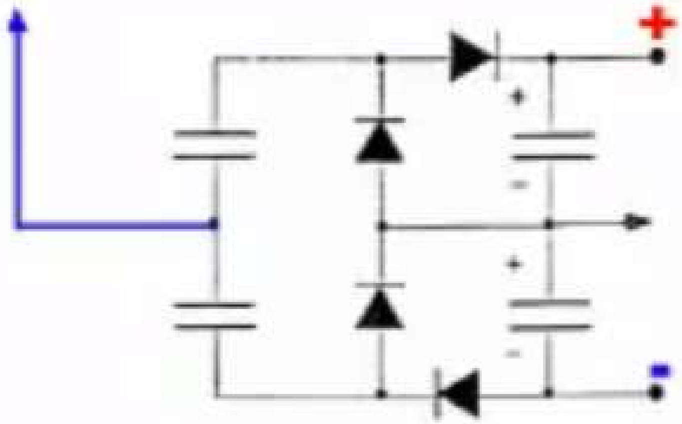
Pentru a urmări funcționarea punții, să presupunem că prima alternanță sosită în nodul *1* este pozitivă. Ea blochează dioda D_2 și o deschide pe D_1, debitînd prin R_S un curent I_1 (săgețile pline), care se întoarce la

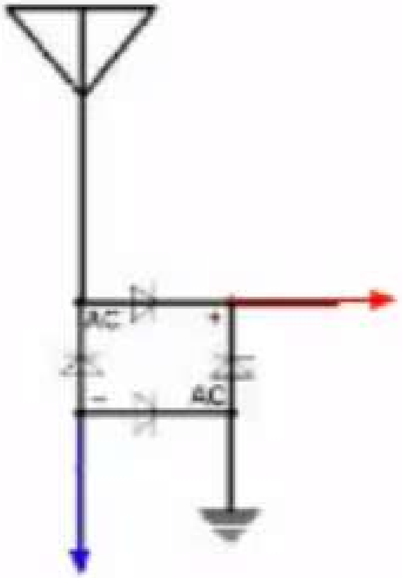
tice sau cu parametri cît mai apro-

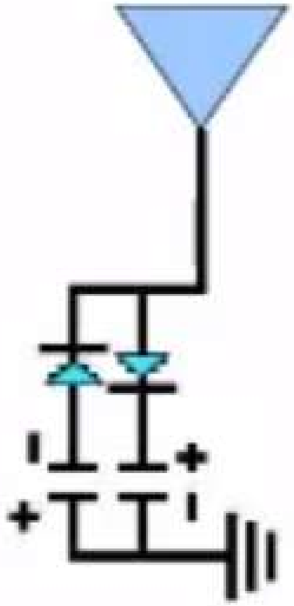


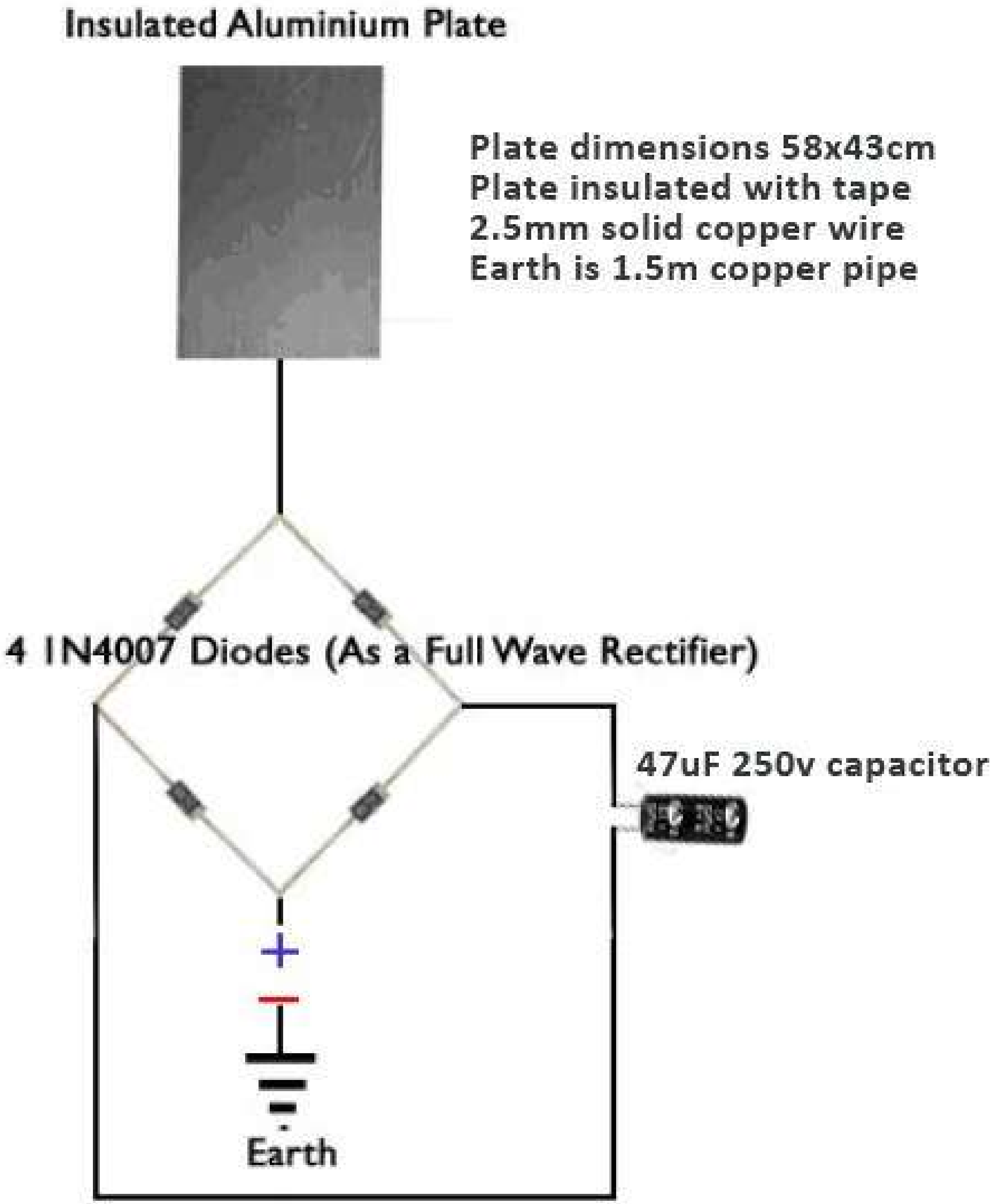
III.9. Puntea redresoare în diferite reprezentări.

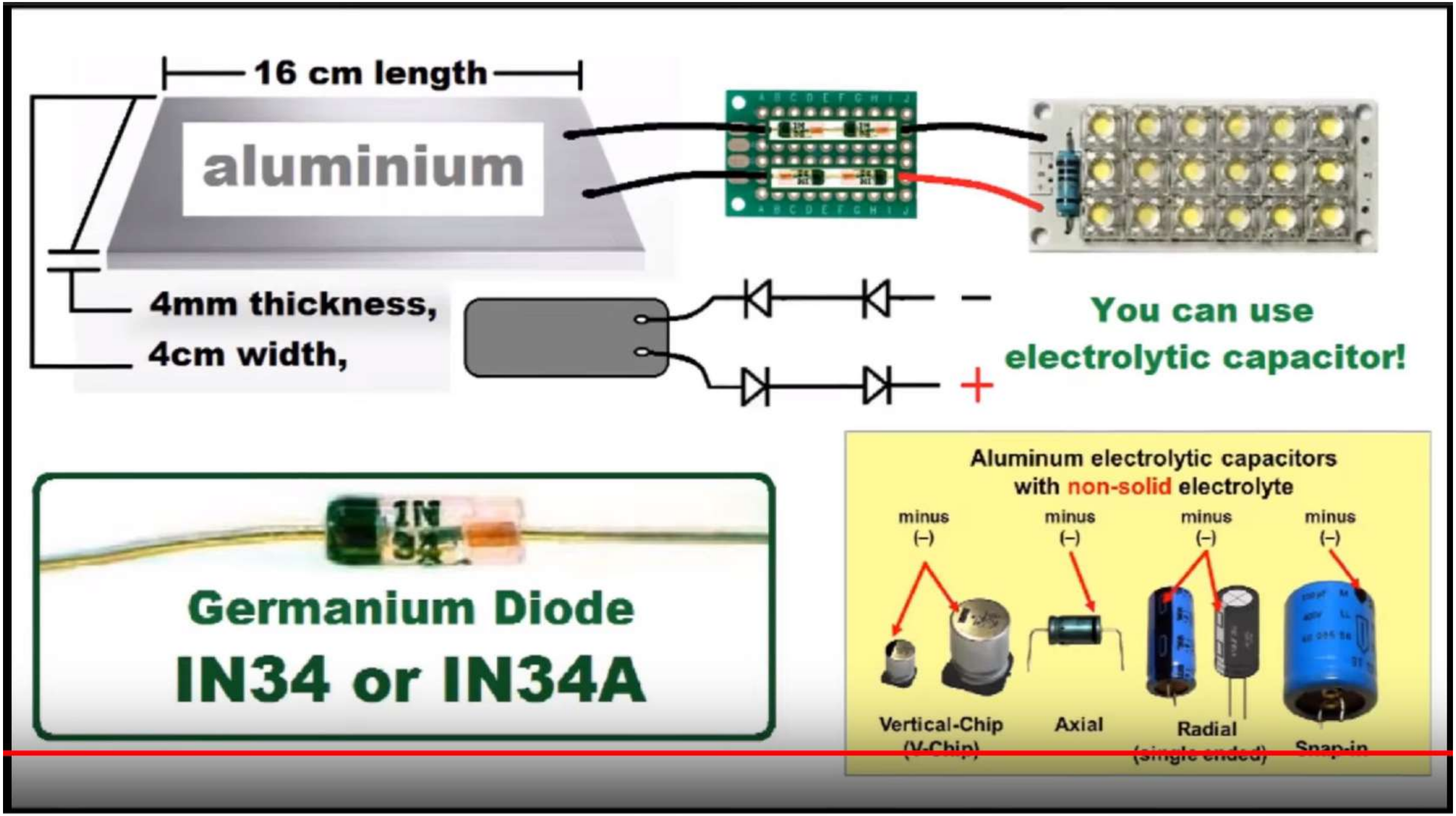
circuits used on LC "RadioWaves"

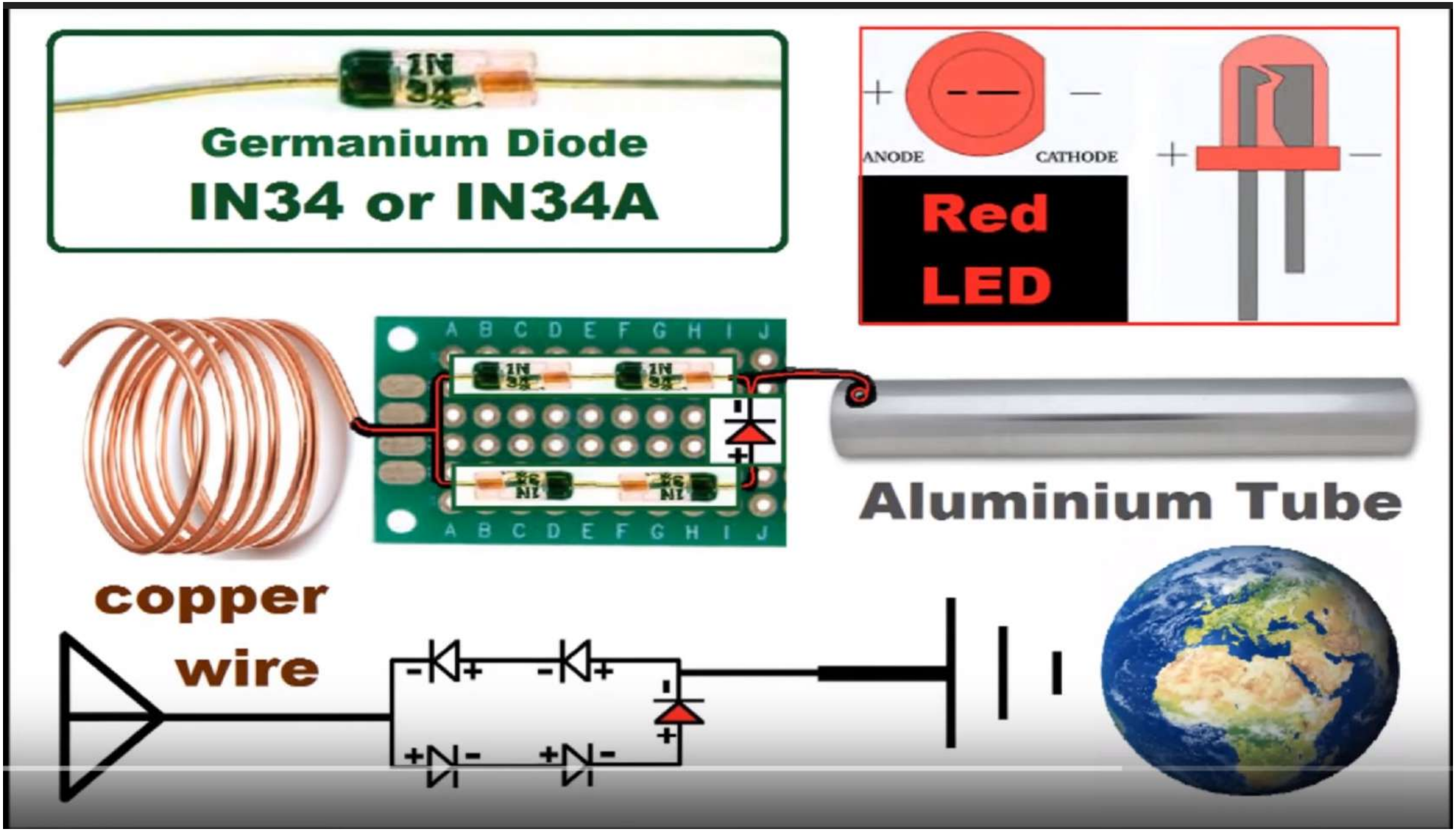




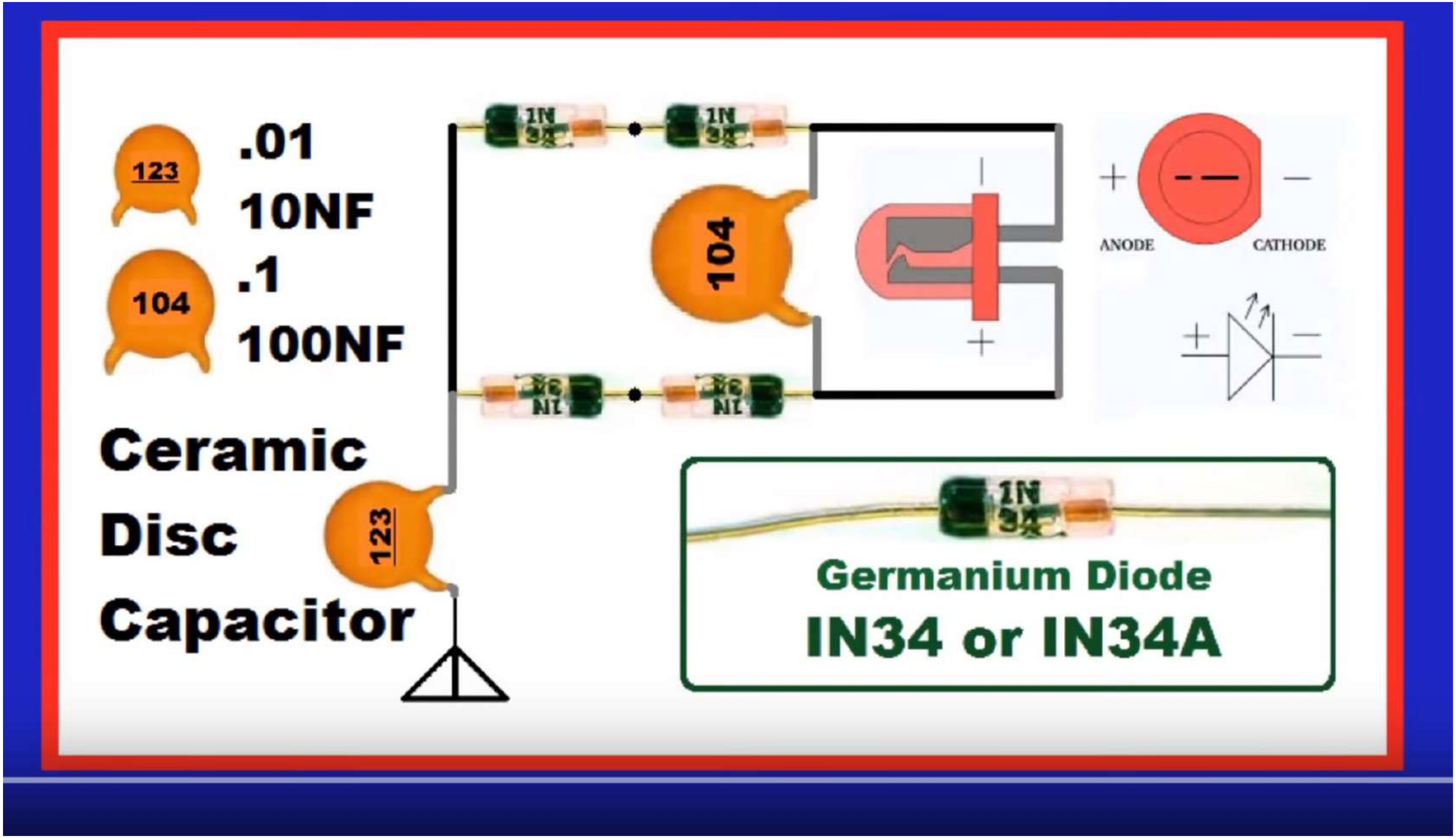



Insulated Aluminium Plate
Plate dimensions 58x43cm
Plate insulated with tape
2.5mm solid copper wire
Earth is 1.5m copper pipe
4 1N4007 Diodes (As a Full Wave Rectifier)
47uF 250v capacitor
+
-
Earth

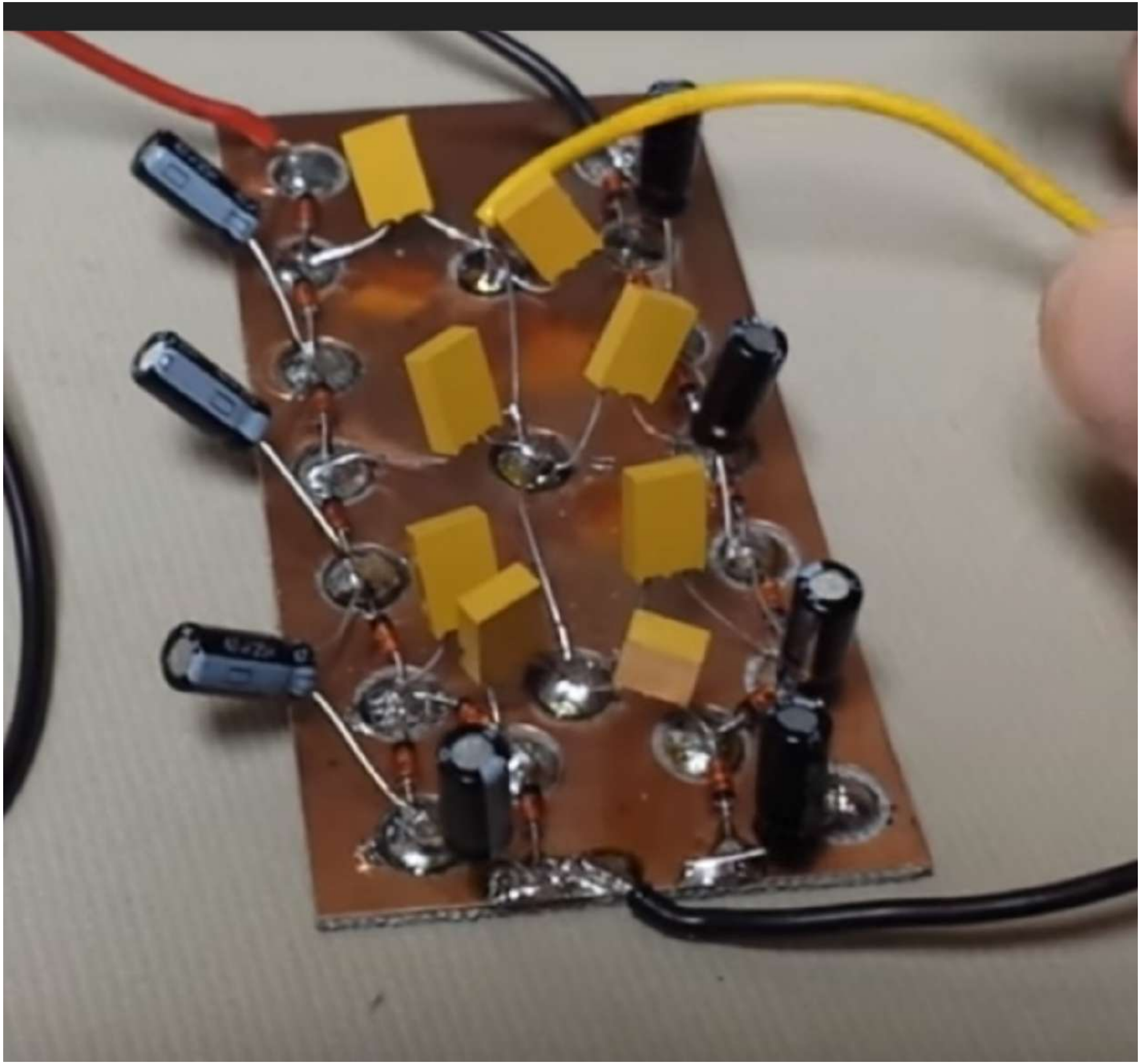

16 cm length
aluminium
4mm thickness,
4cm width,
You can use
electrolytic capacitor!
Germanium Diode
IN34 or IN34A
Aluminum electrolytic capacitors
with non-solid electrolyte
minus
(–)
Vertical-Chip
Axial
Radial

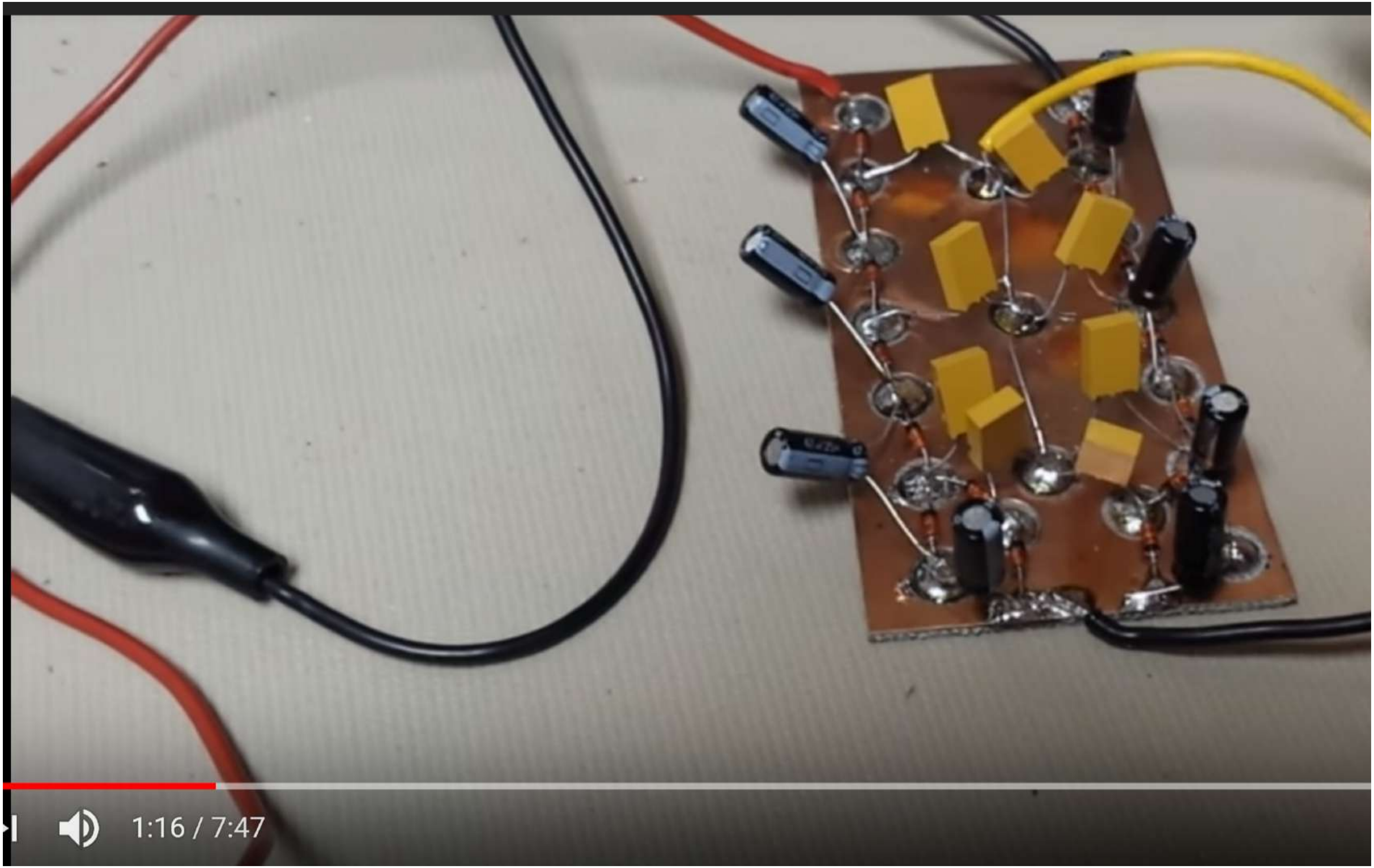


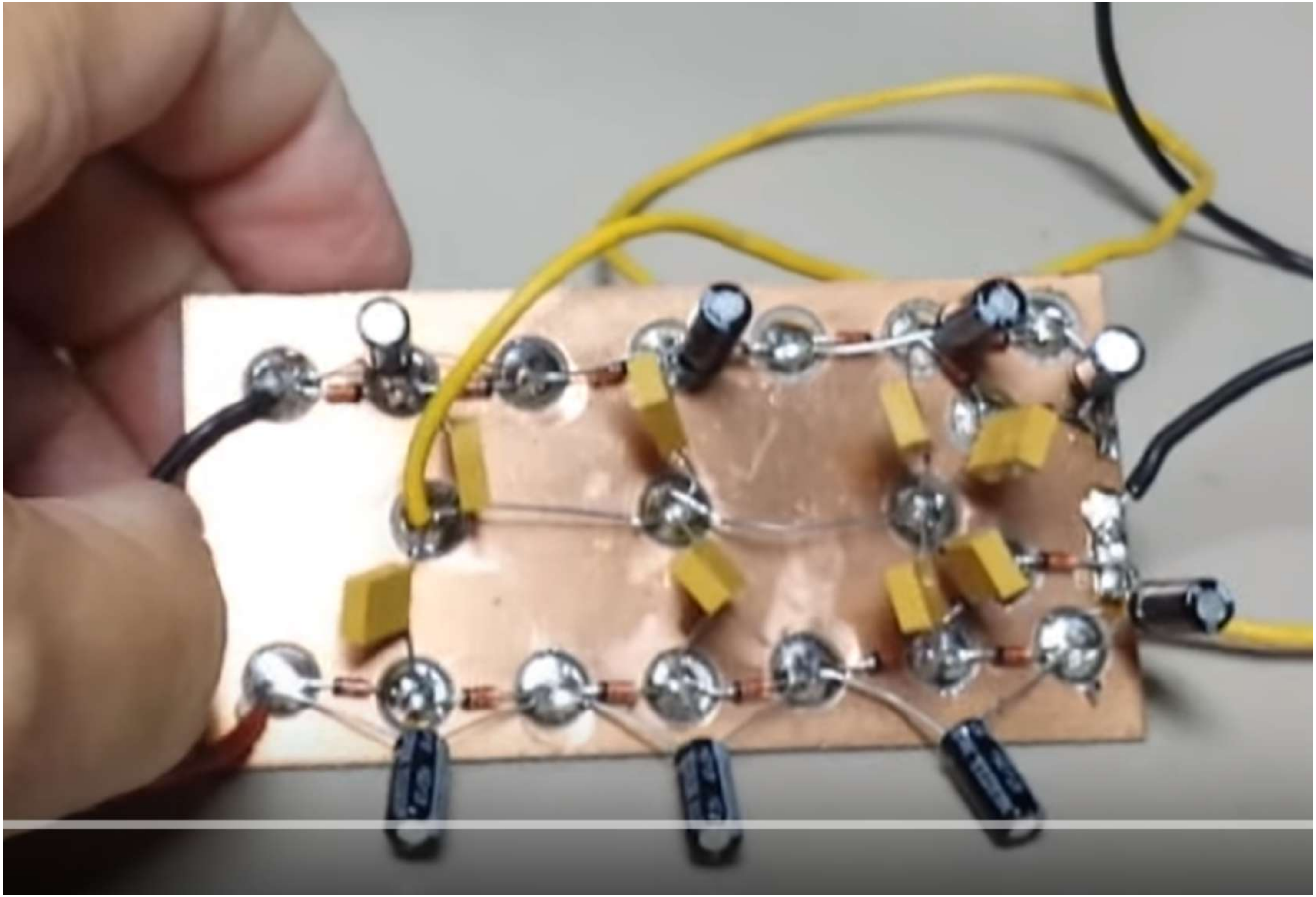
1N 34
Germanium Diode
IN34 or IN34A
ANODE
CATHODE
Red
LED
A B C D E F G H I J
Aluminium Tube
copper
wire

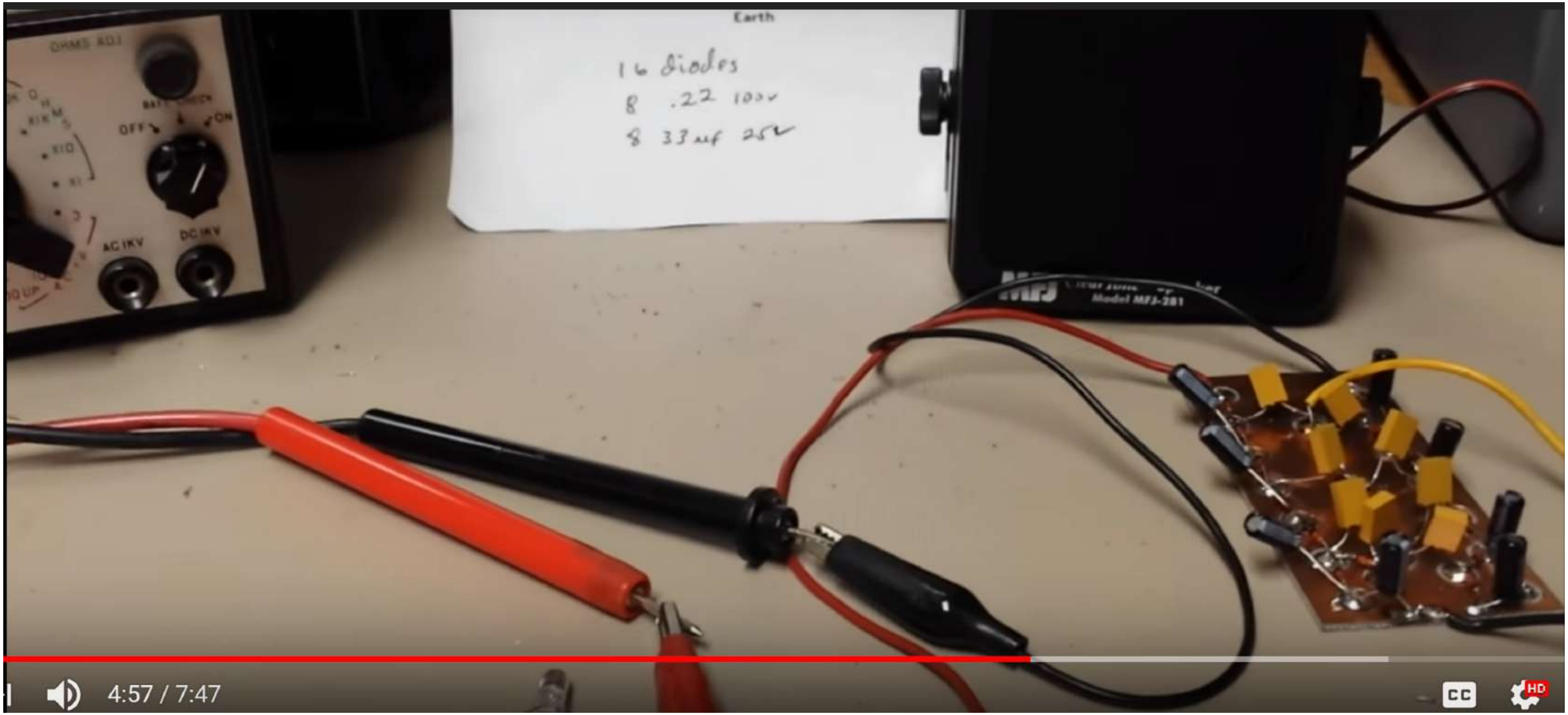


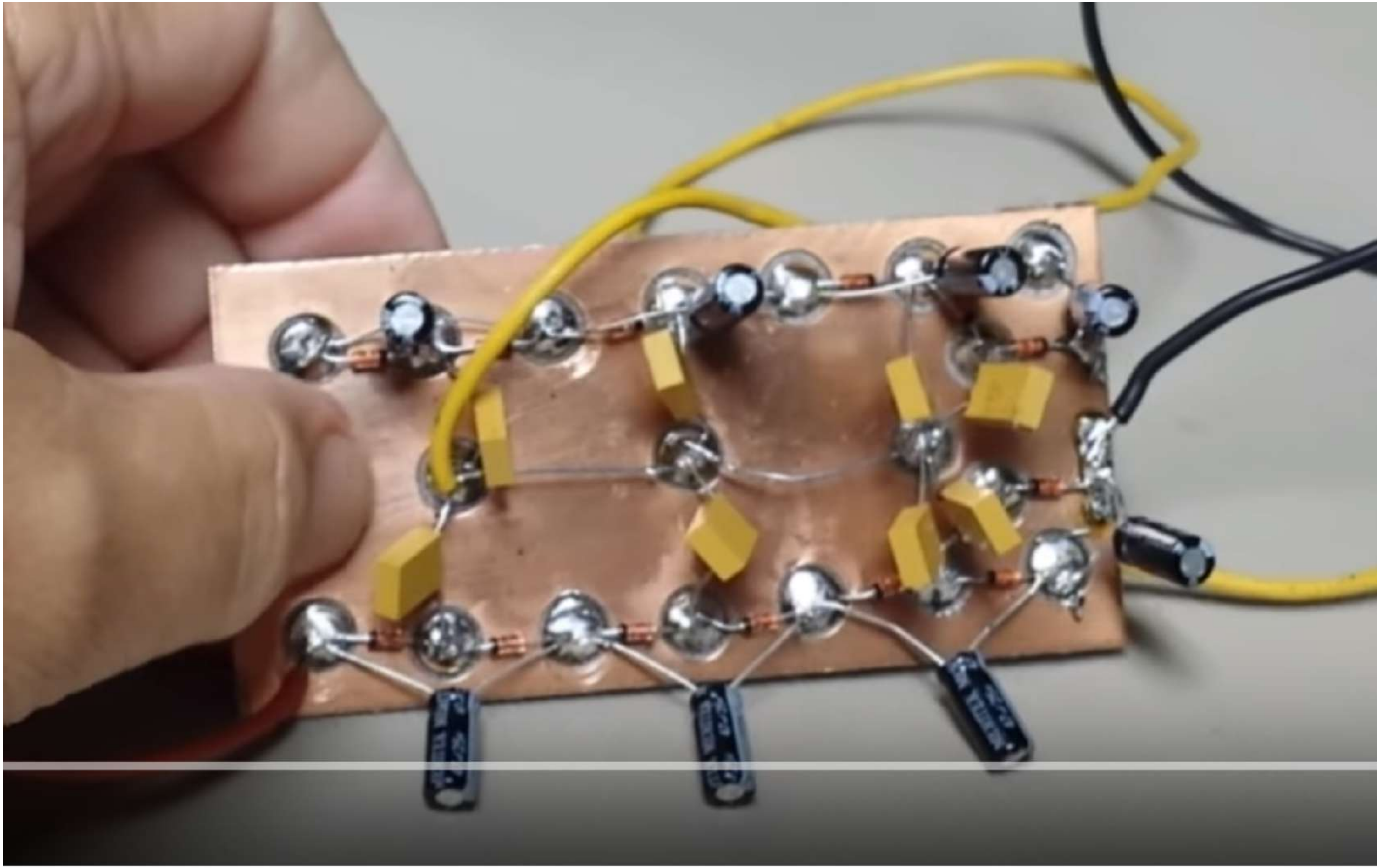
123
.01
10NF
104
.1
100NF
Ceramic
Disc
Capacitor
ANODE
CATHODE
Germanium Diode
IN34 or IN34A

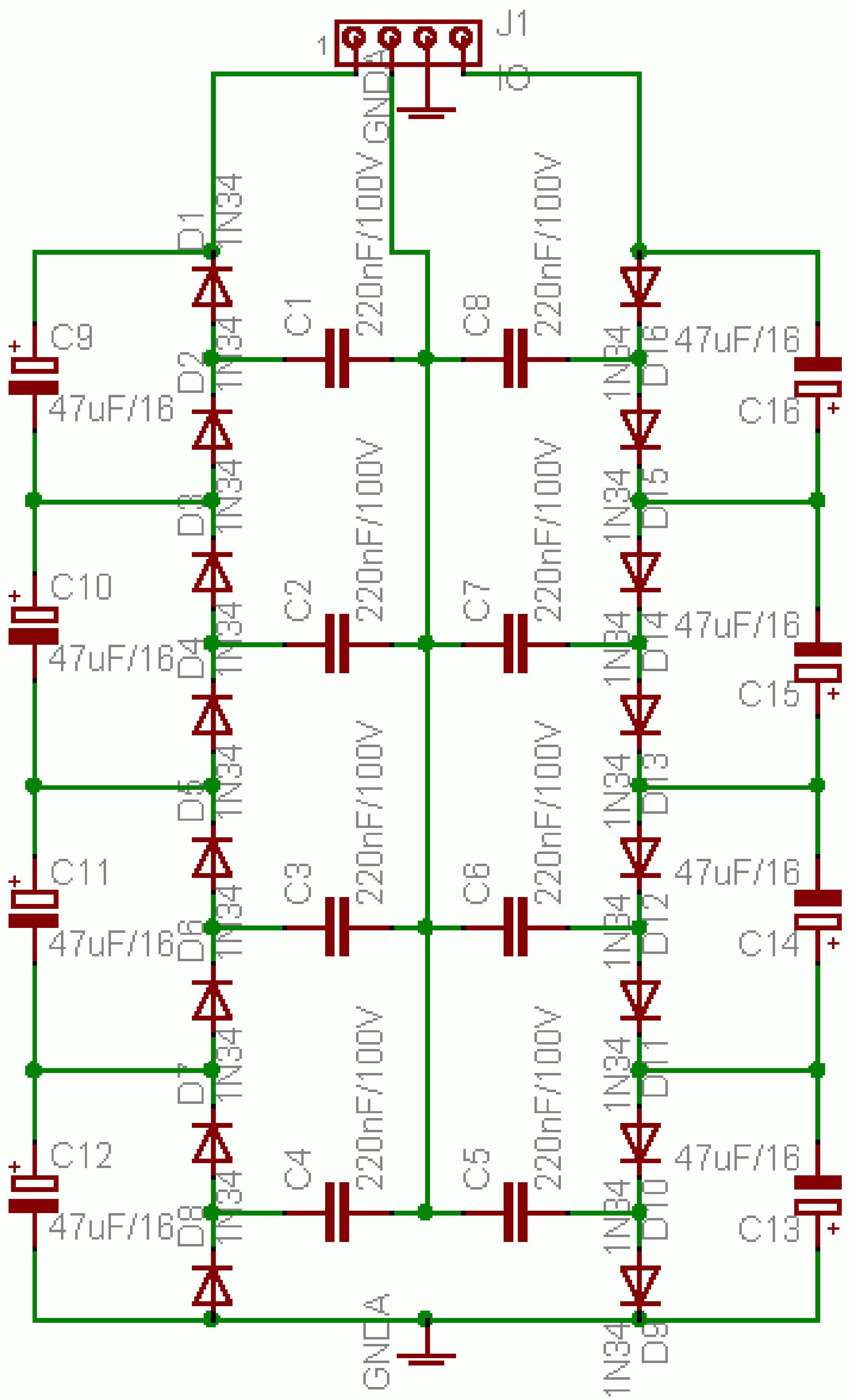



1:16 / 7:47




Earth
16 diodes
8 .22 100v
8 33uf 25v
OHMS ADJ
OFF
ON
AC 1KV
DC 1KV
Model MFJ-281
4:57 / 7:47
CC
HD

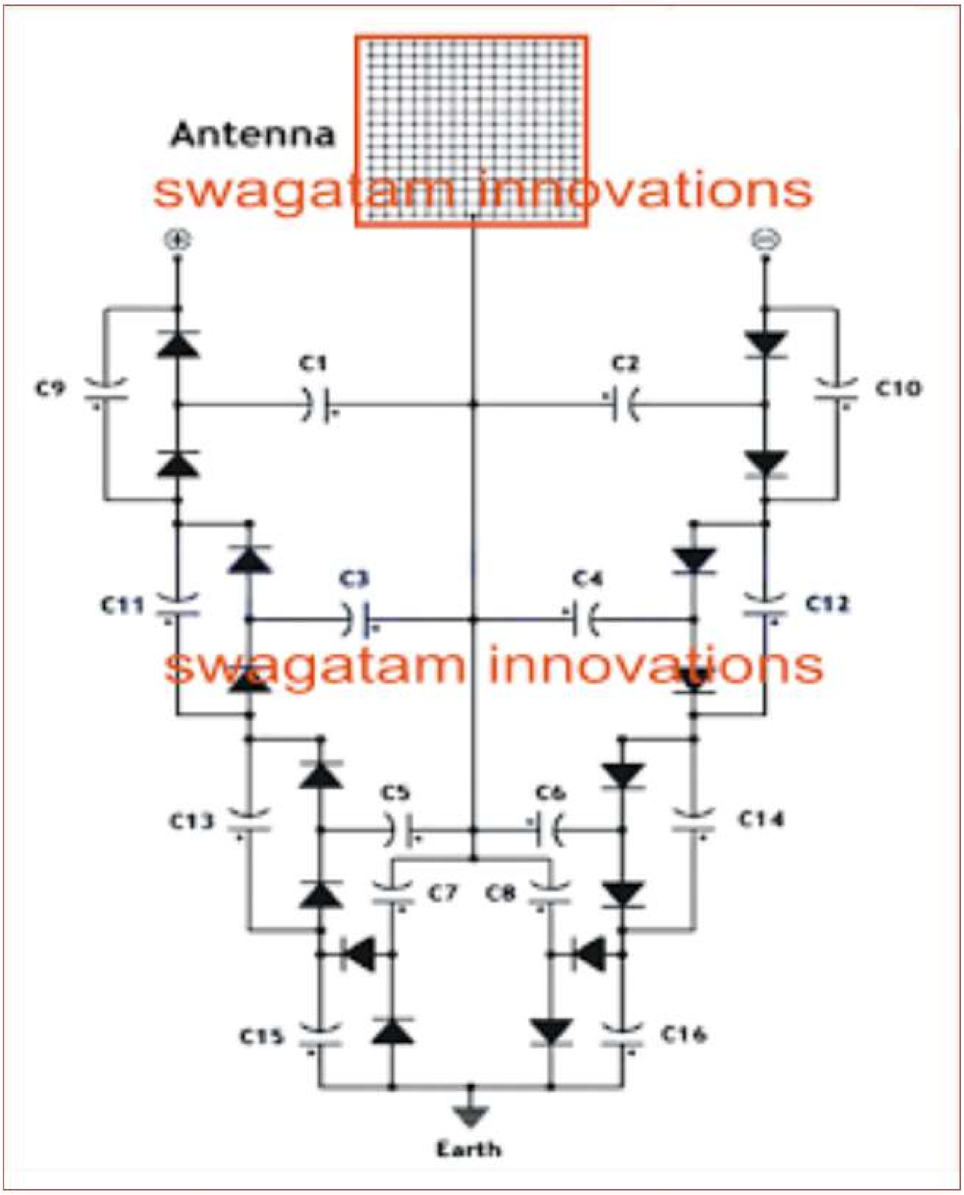




AMBIENT POWER MODULE

(C) - GROUNDLOOP 2012

Circuit Diagram

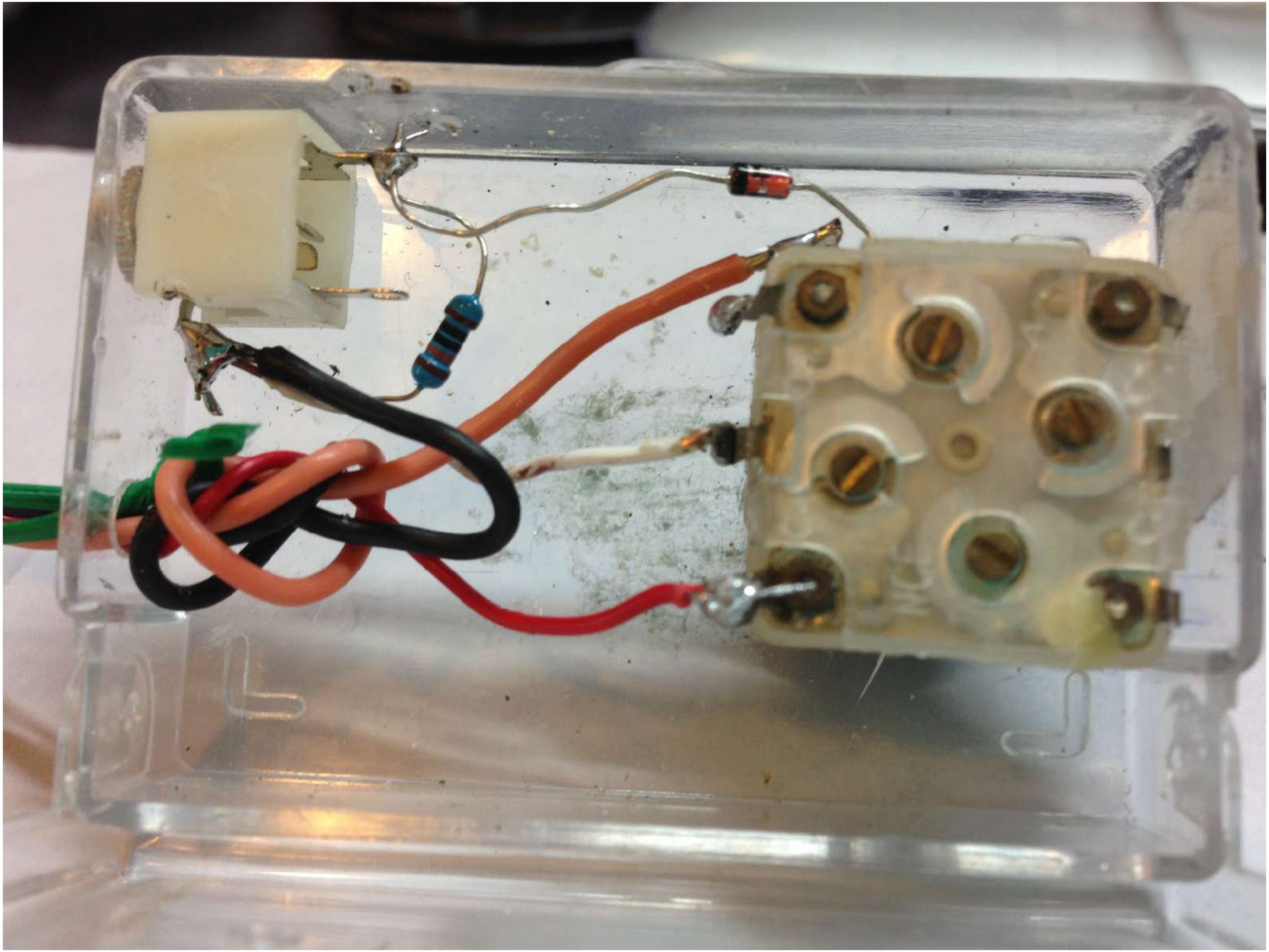


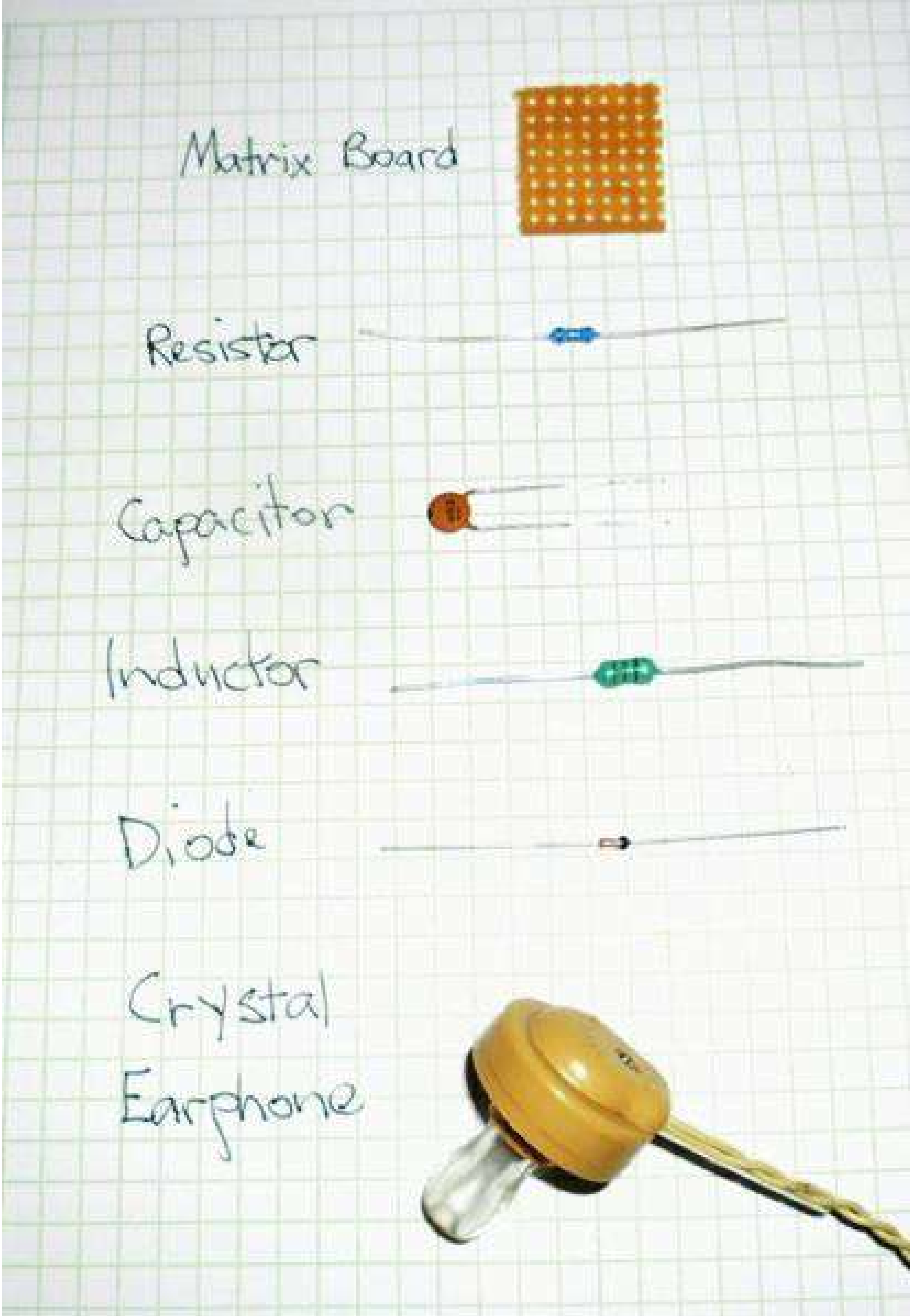
Parts List

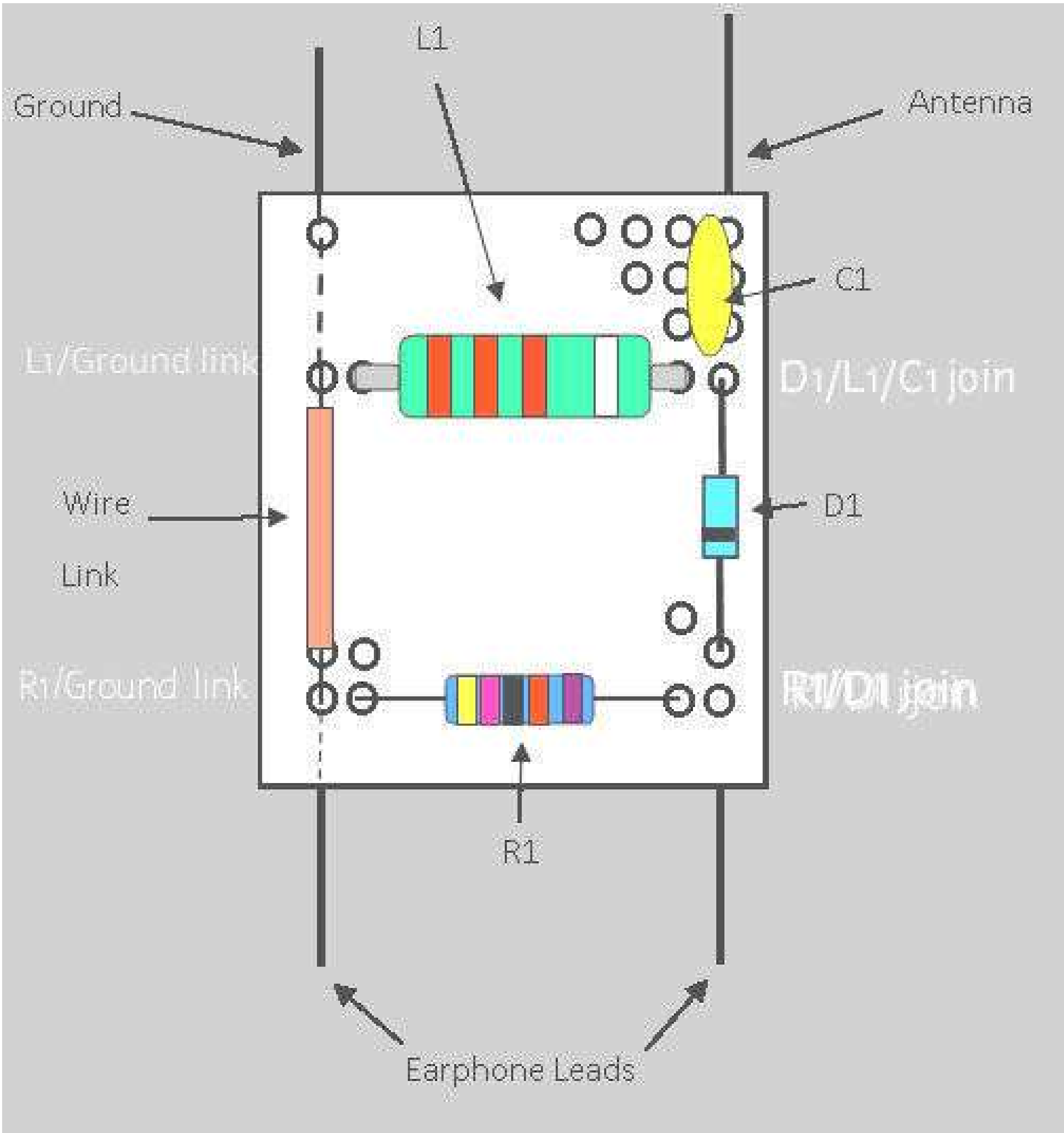
All Diodes are 1N4148

C1---C8 = 0.22uF/100V mylar

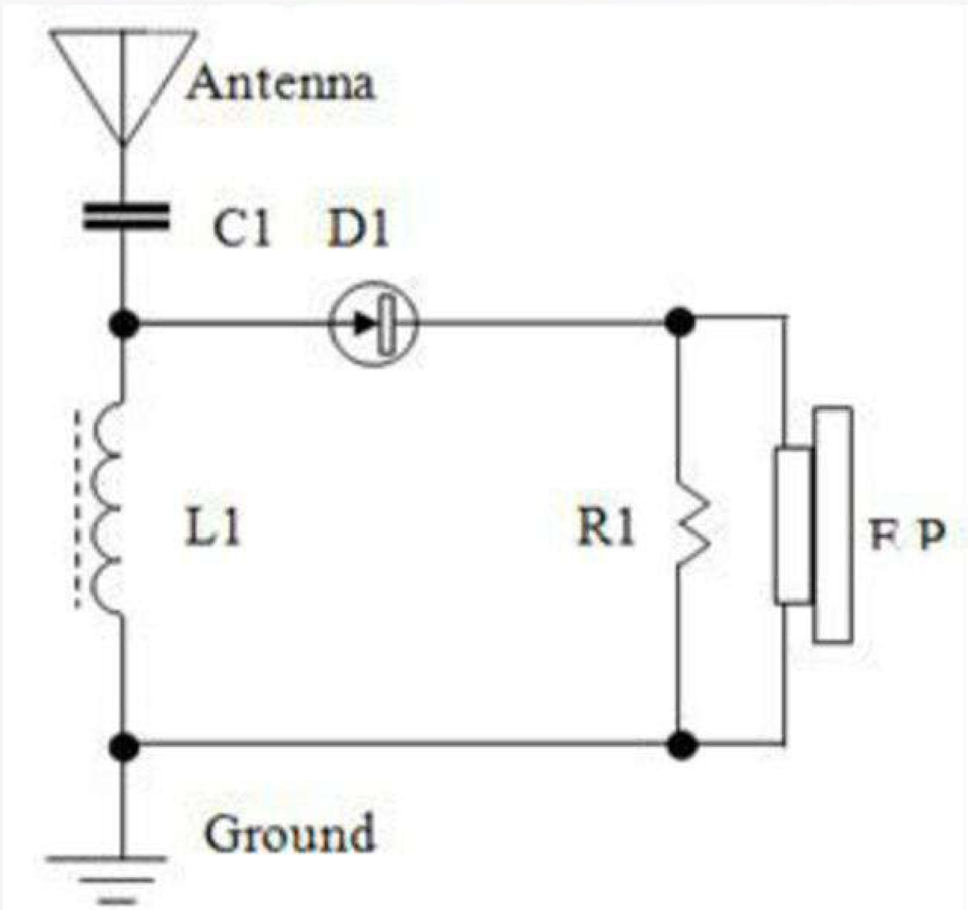
C9----C16 = 33uF/25V electrolytic

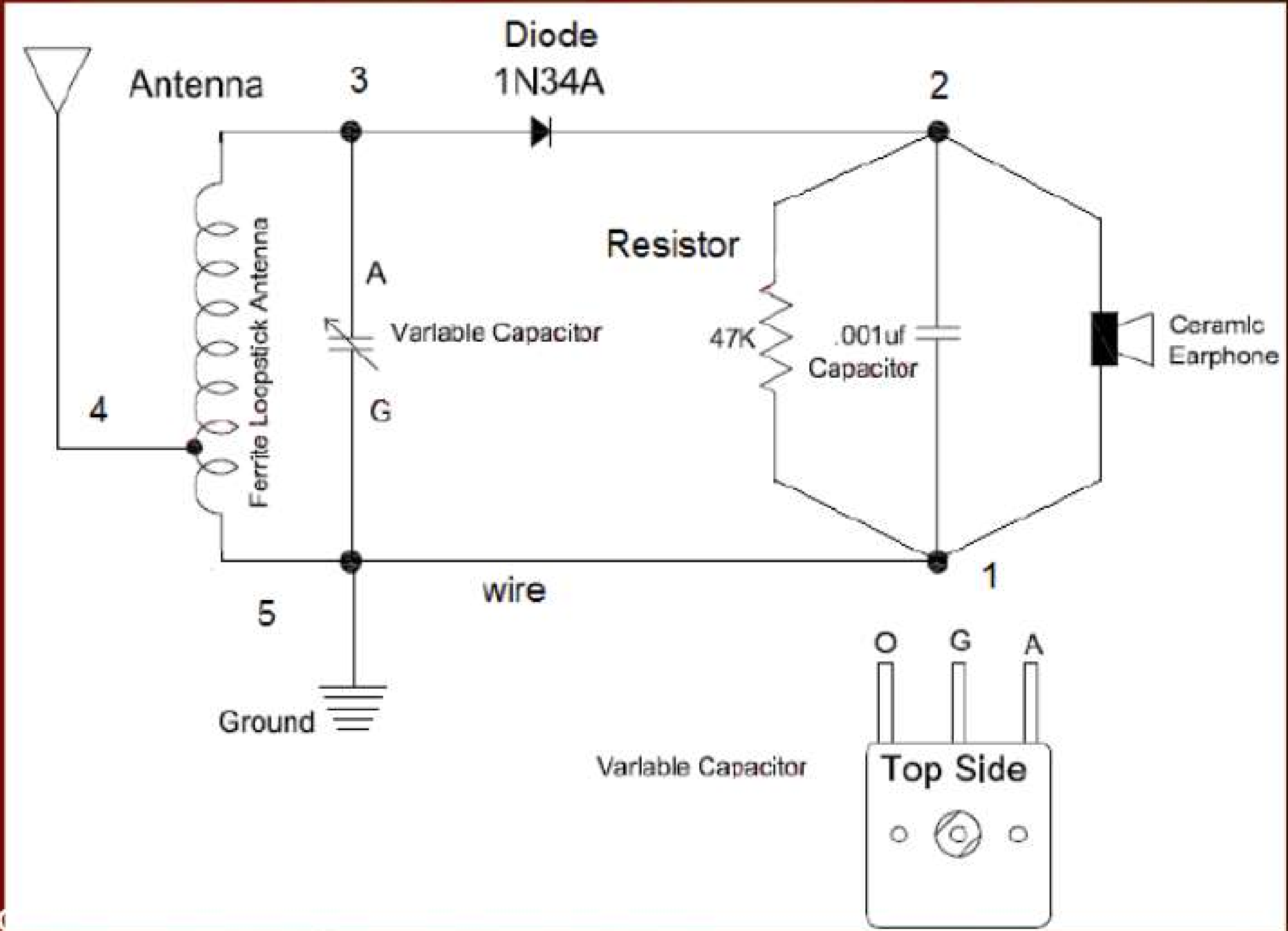



Matrix Board
Resistor
Capacitor
Inductor
Diode
Crystal
Earphone

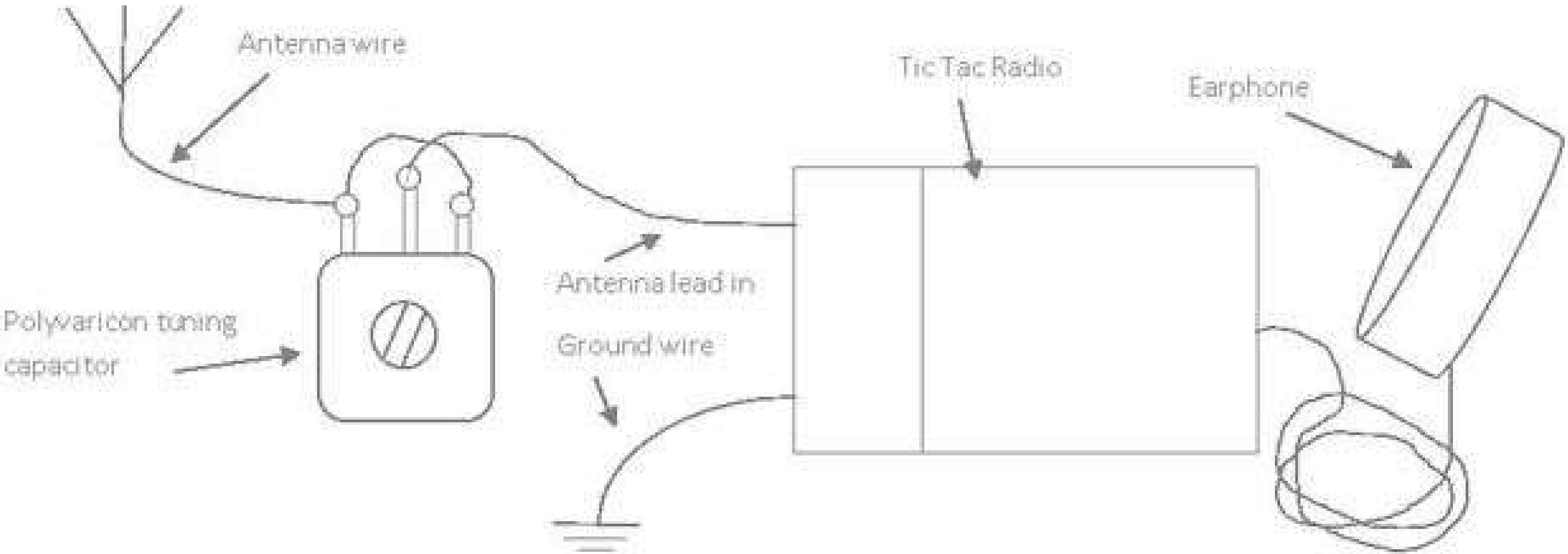

L1
Ground
Antenna
C1
L1/Ground link
D1/L1/C1 join
Wire
Link
D1
R1/Ground link
R1/D1 join
R1
Earphone Leads

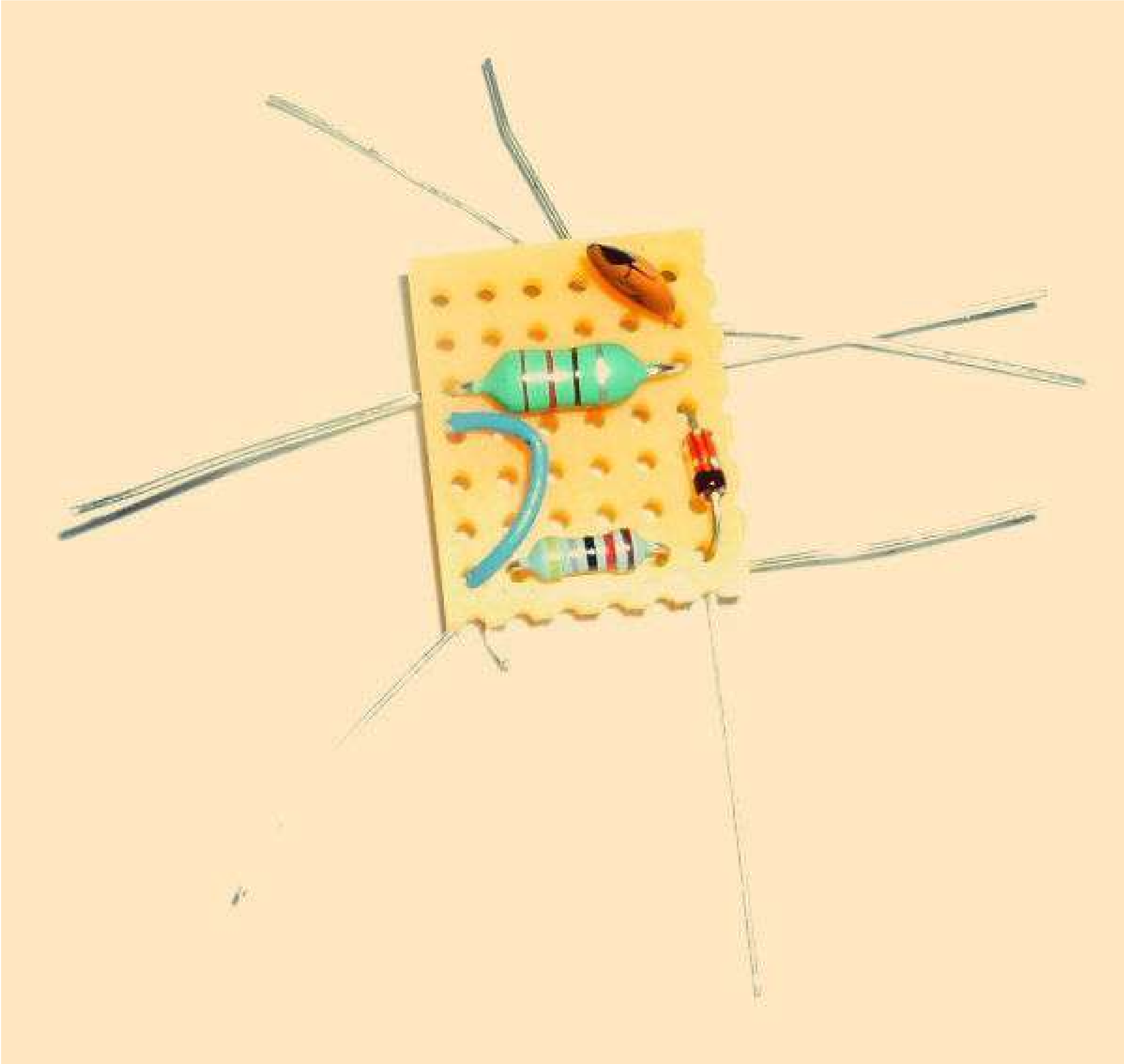

tic tac
Strawberry Fields
24g NET
FRESHNESS IN 2 CALORIES

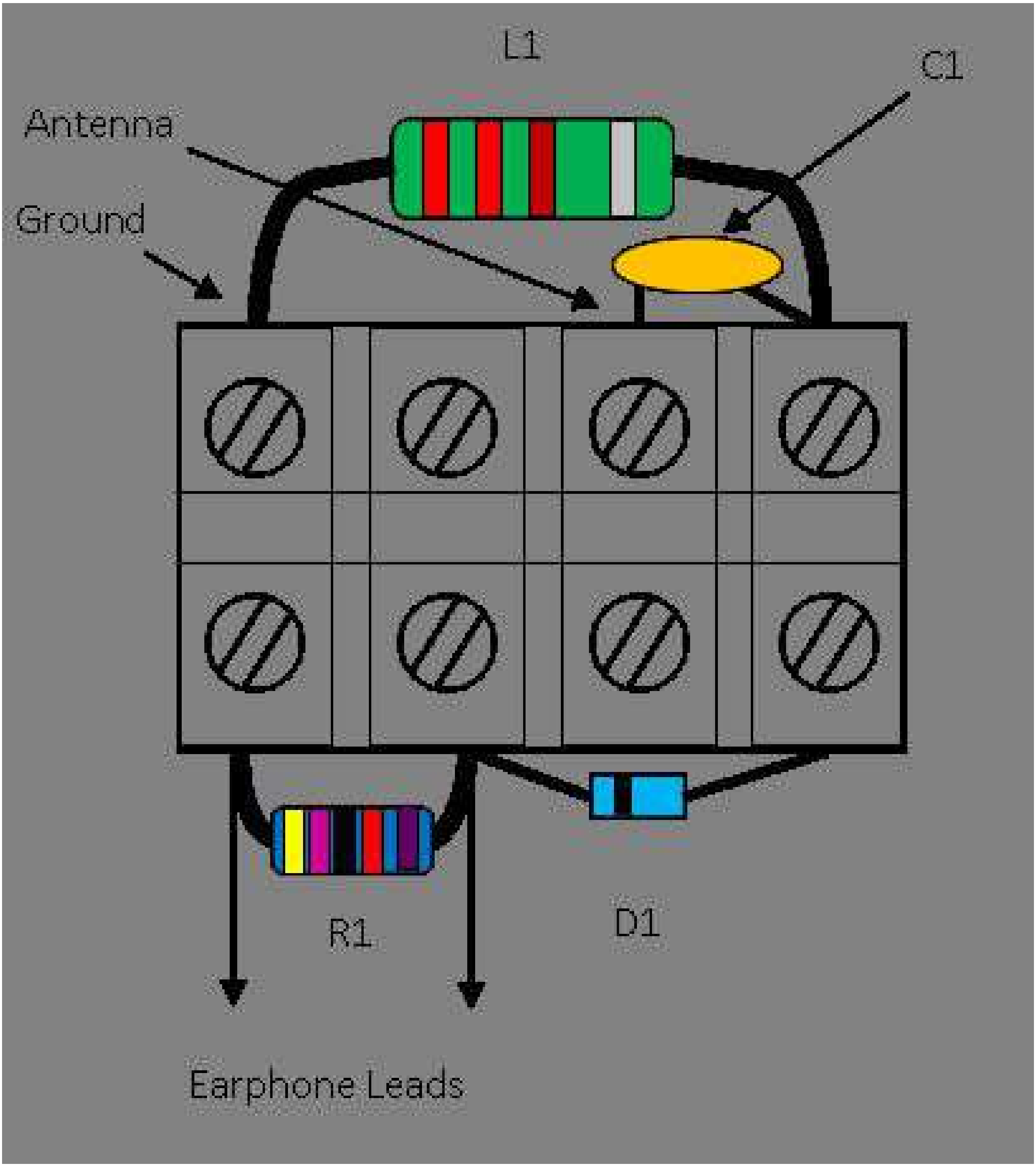

Antenna
C1
D1
L1
R1
E P
Ground

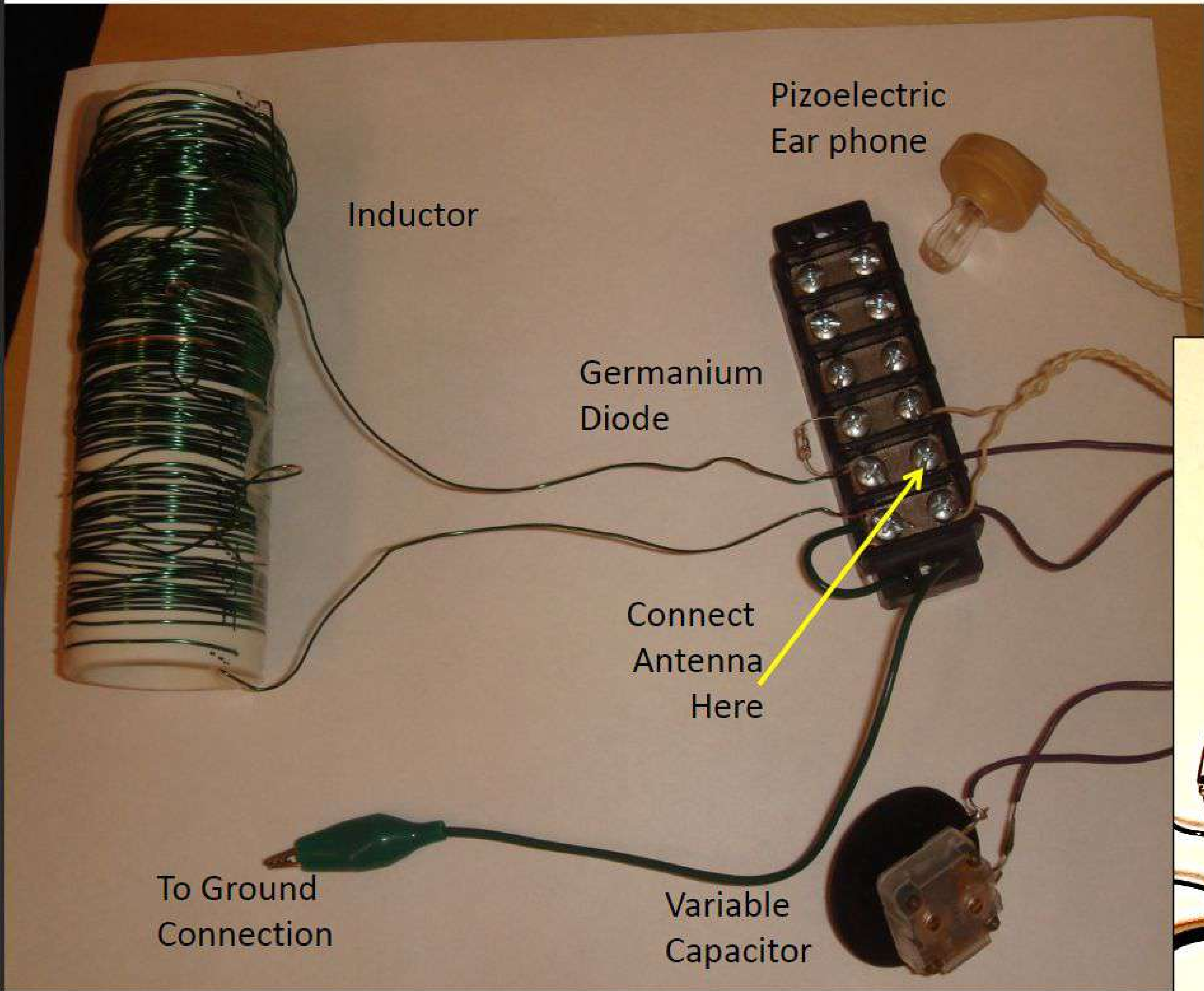


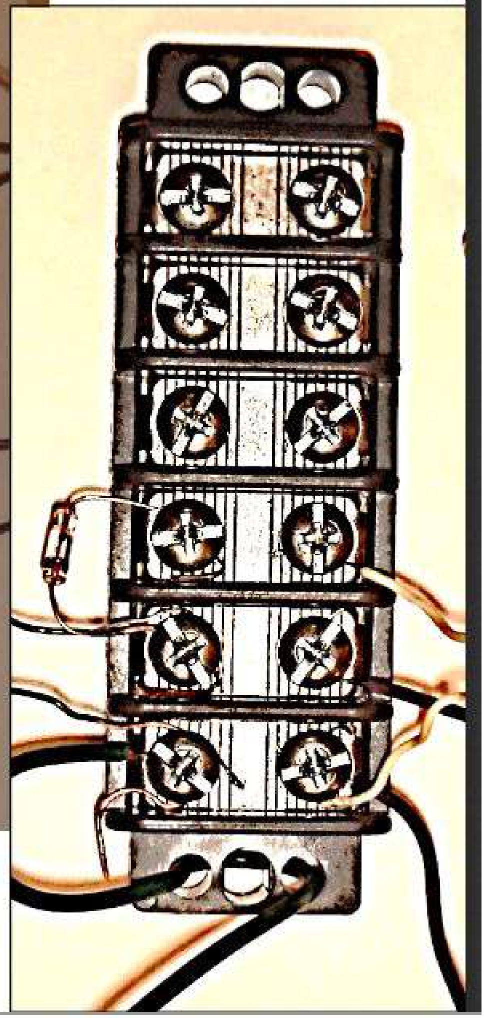
[Sc
http://www.angelfire.com/electronic2/index1/DmCrystalSet.html]

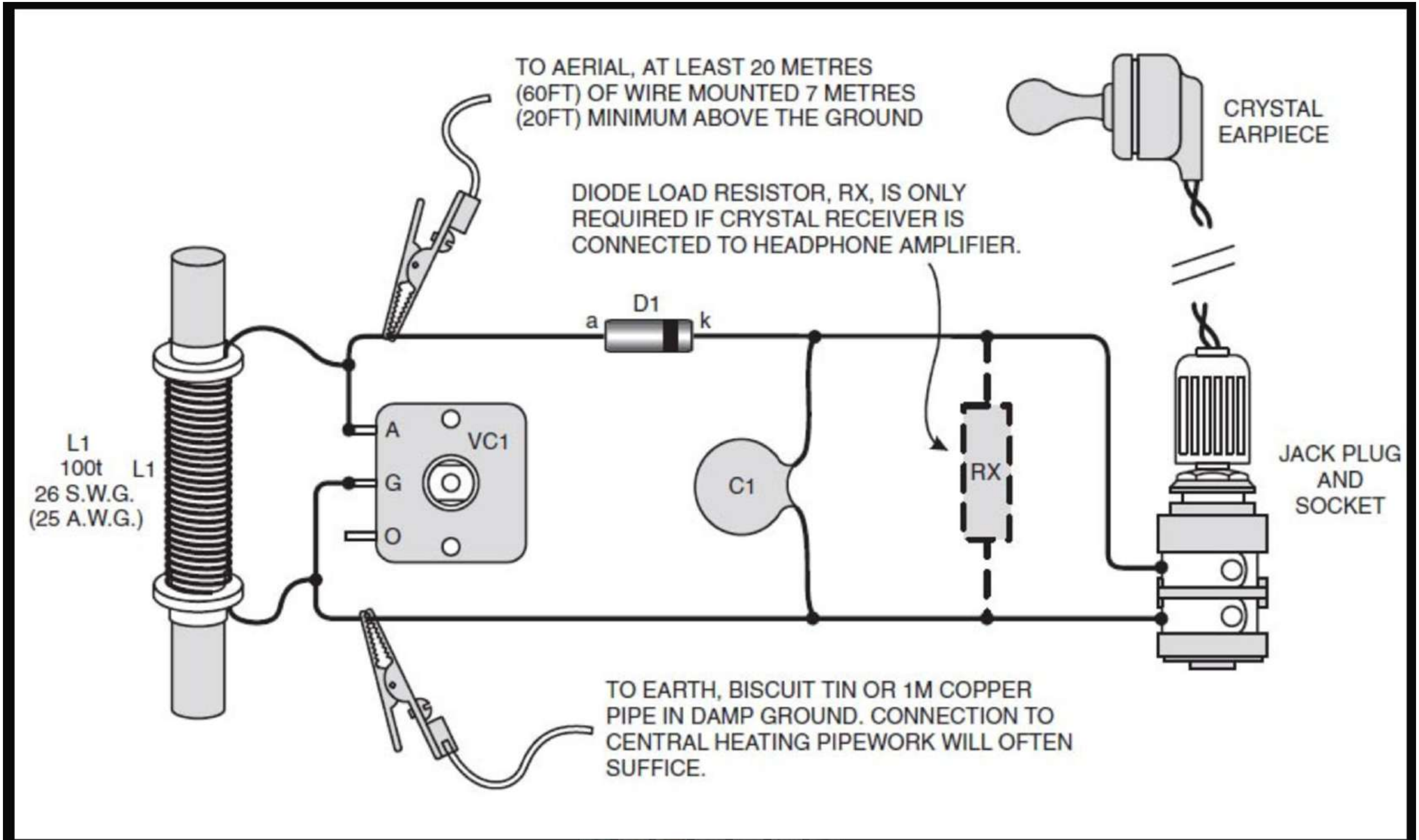

Antenna wire
Tic Tac Radio
Earphone
Antenna lead in
Ground wire
Polyvaricon tuning capacitor

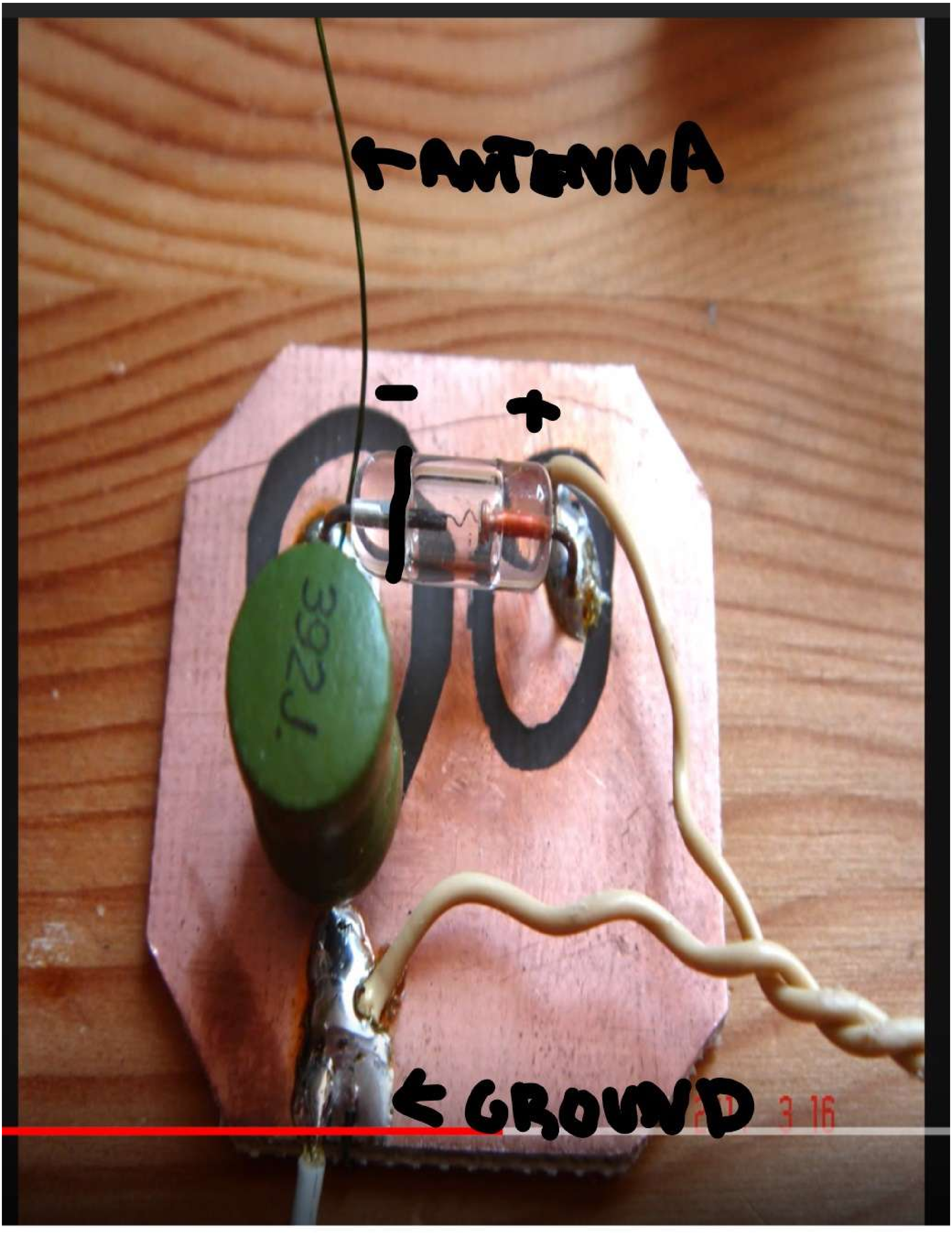



L1
C1
Antenna
Ground
R1
D1
Earphone Leads

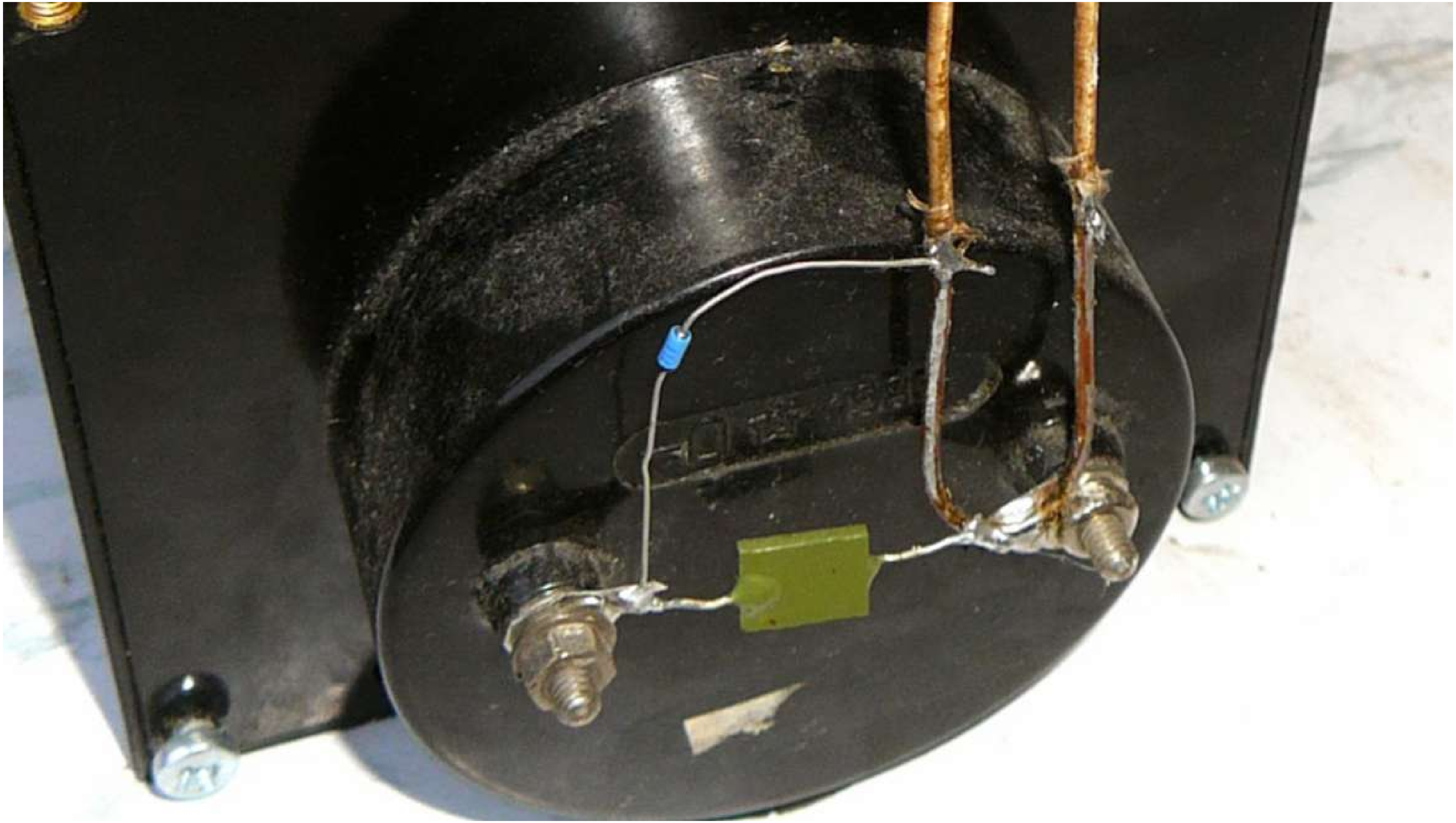

Pizoelectric
Ear phone
Inductor
Germanium
Diode
Connect
Antenna
Here
To Ground
Connection
Variable
Capacitor

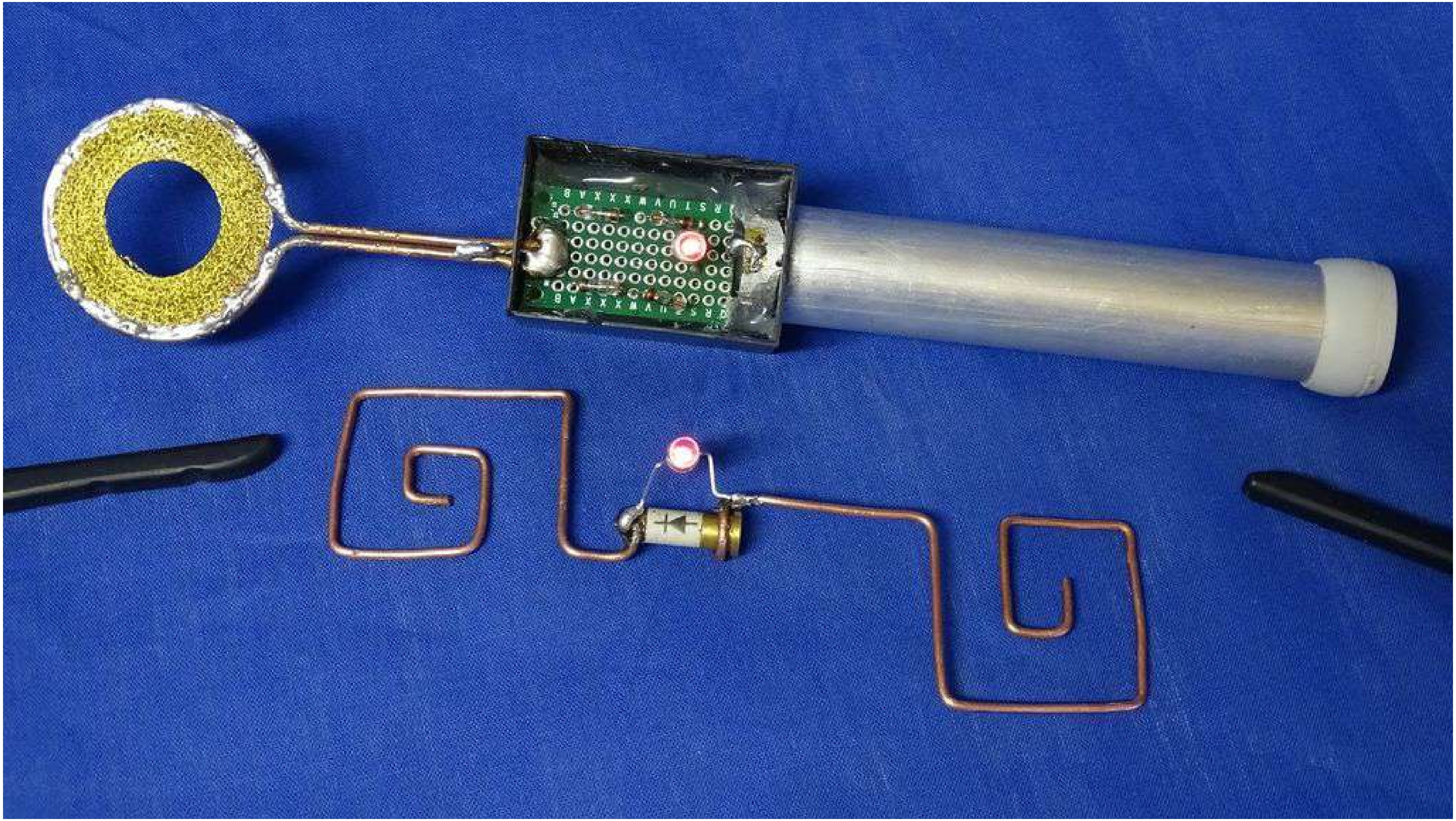



TO AERIAL, AT LEAST 20 METRES
(60FT) OF WIRE MOUNTED 7 METRES
(20FT) MINIMUM ABOVE THE GROUND
CRYSTAL
EARPIECE
DIODE LOAD RESISTOR, RX, IS ONLY
REQUIRED IF CRYSTAL RECEIVER IS
CONNECTED TO HEADPHONE AMPLIFIER.
D1
a
k
L1
100t
L1
26 S.W.G.
(25 A.W.G.)
A
G
O
VC1
C1
RX
JACK PLUG
AND
SOCKET
TO EARTH, BISCUIT TIN OR 1M COPPER
PIPE IN DAMP GROUND. CONNECTION TO
CENTRAL HEATING PIPEWORK WILL OFTEN
SUFFICE.



ANTENNA
-
+
392J.
GROUND



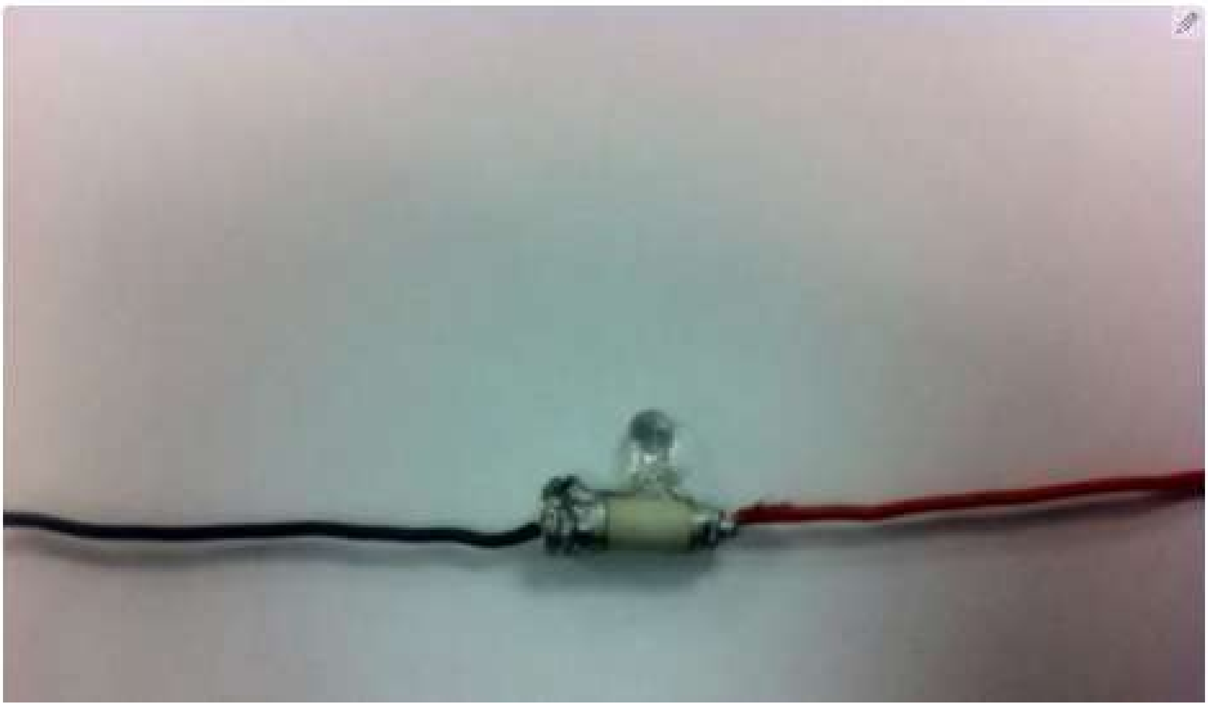


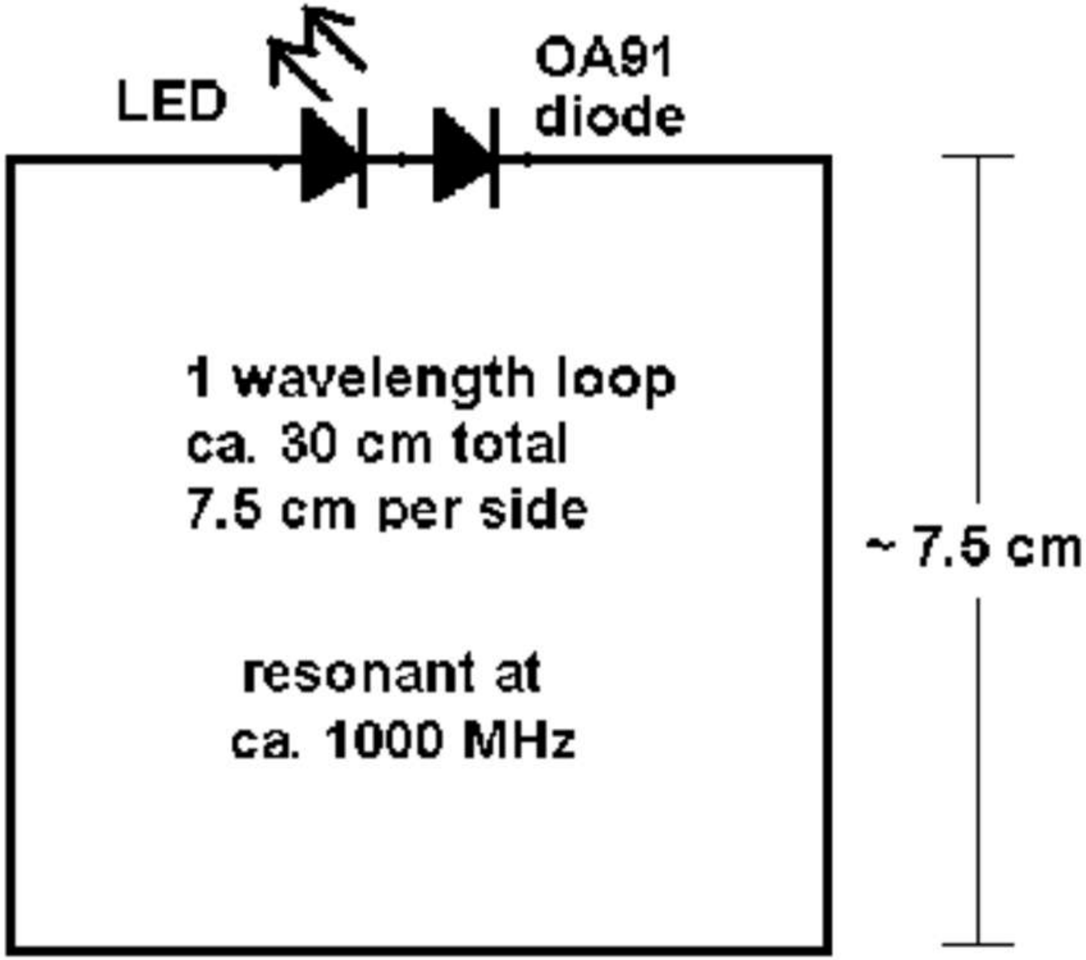
Step 1: LED+RF Diode

First Solder the led parallel to the Rf diode

Add Tip Ask Question Comment Download

Step 2: RF Diode+ LED+ Wires

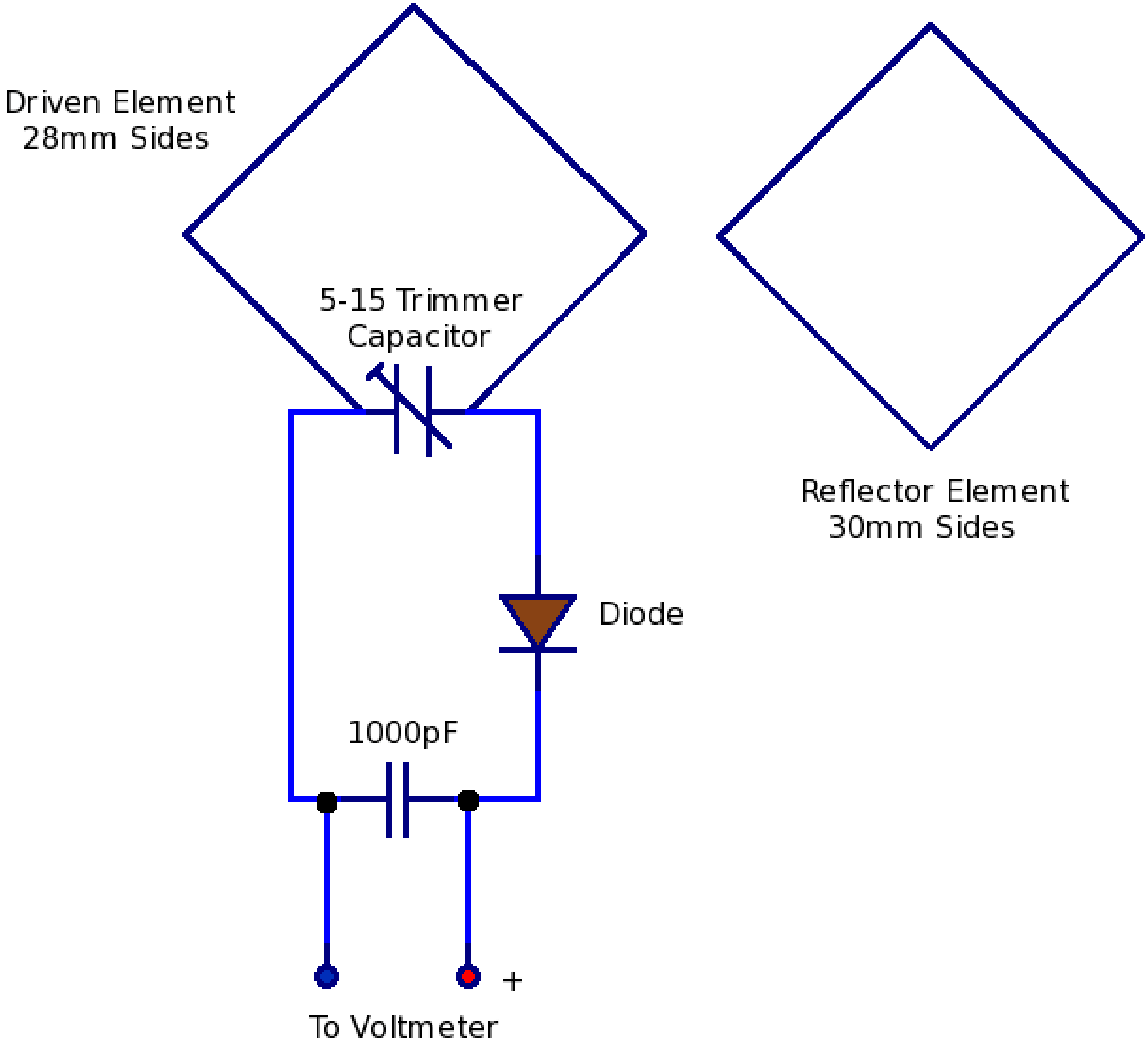


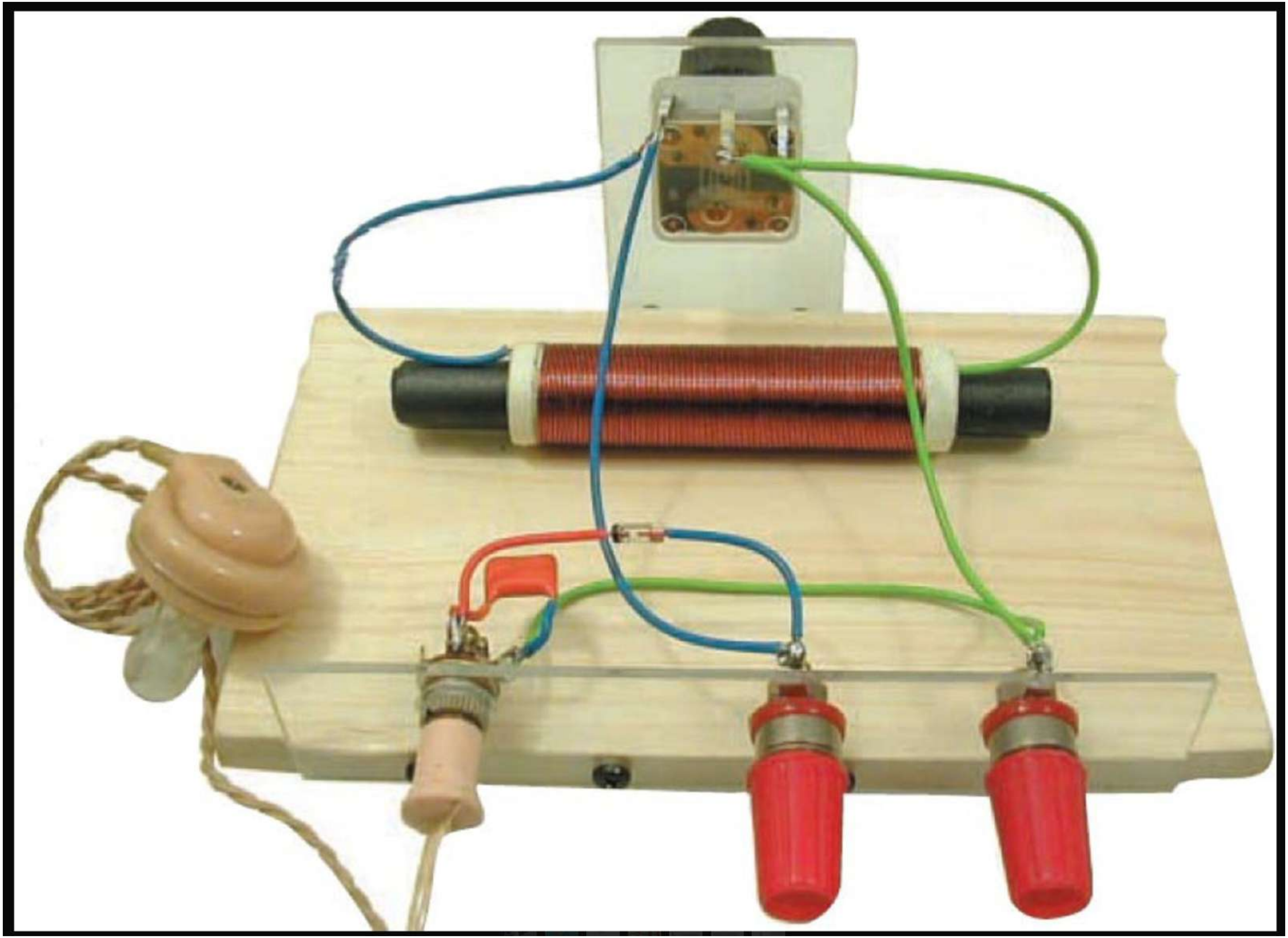

LED
OA91
diode
1 wavelength loop
ca. 30 cm total
7.5 cm per side
resonant at
ca. 1000 MHz
~ 7.5 cm

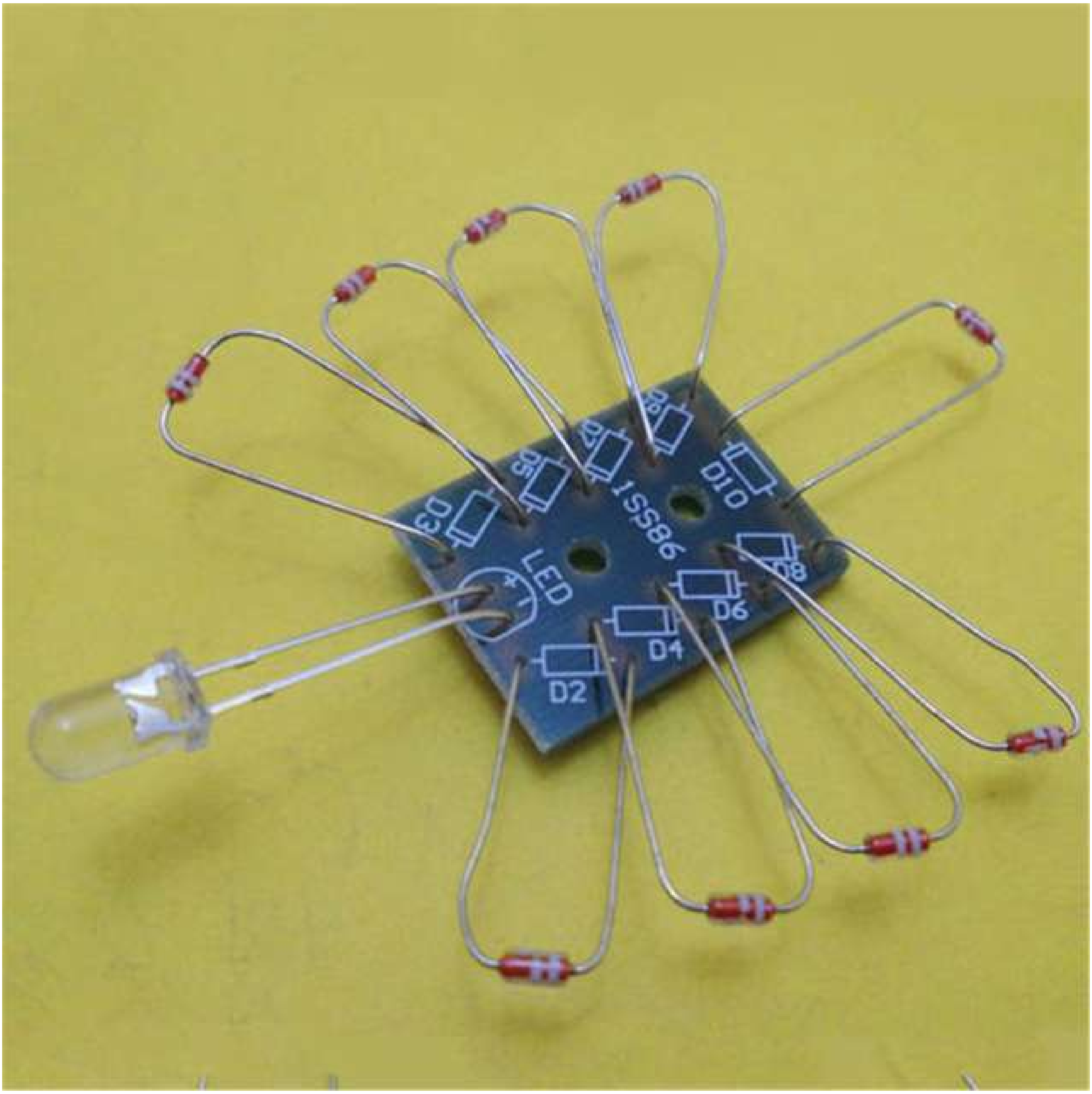

IN23B
0:56 / 1:49
ΕΛΕΜΑΝ

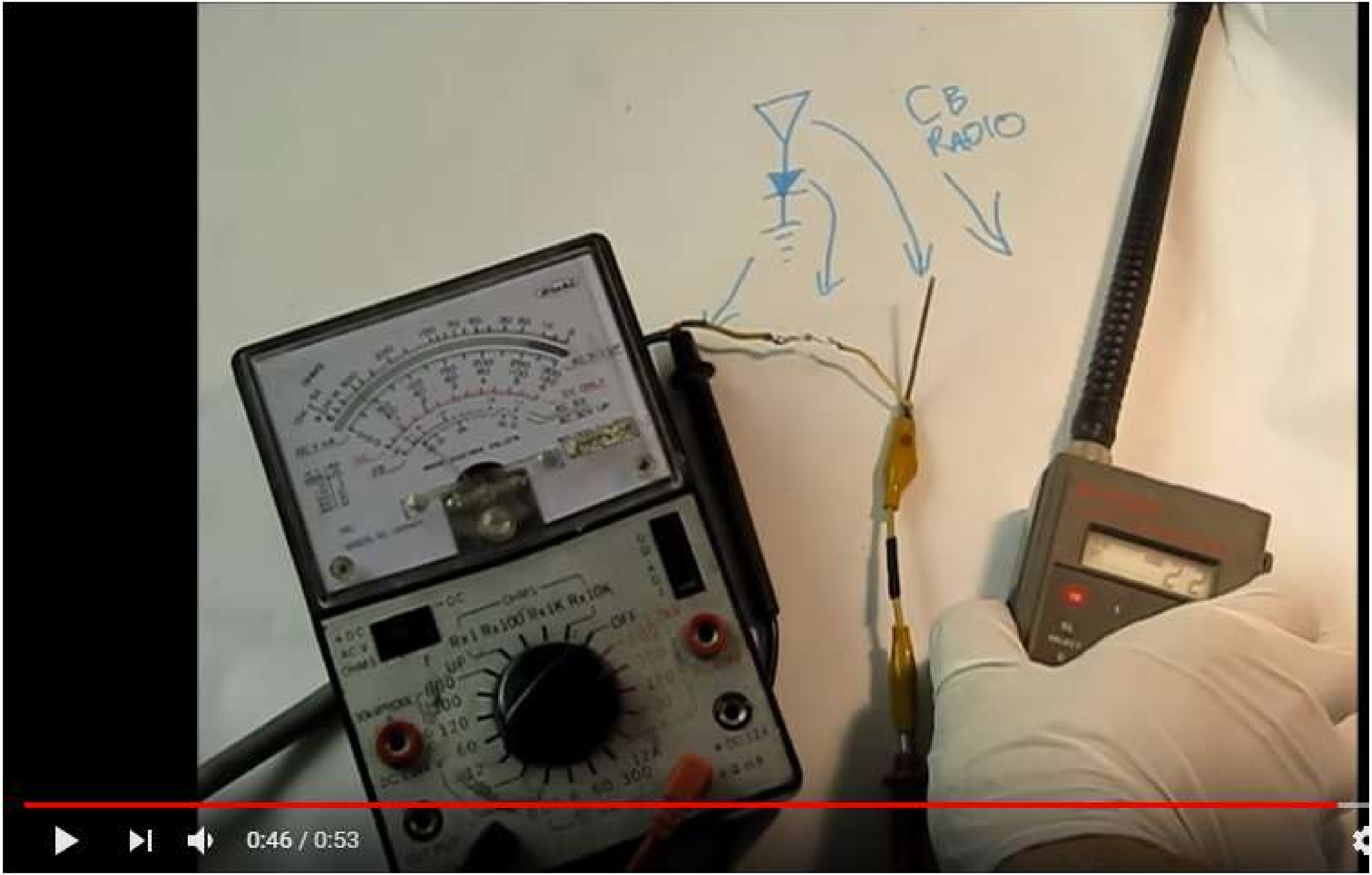

COM LOGIC


Hz
NPN
EBCE
PNP
EBCE
COM
LOGIC
200
2K
2M

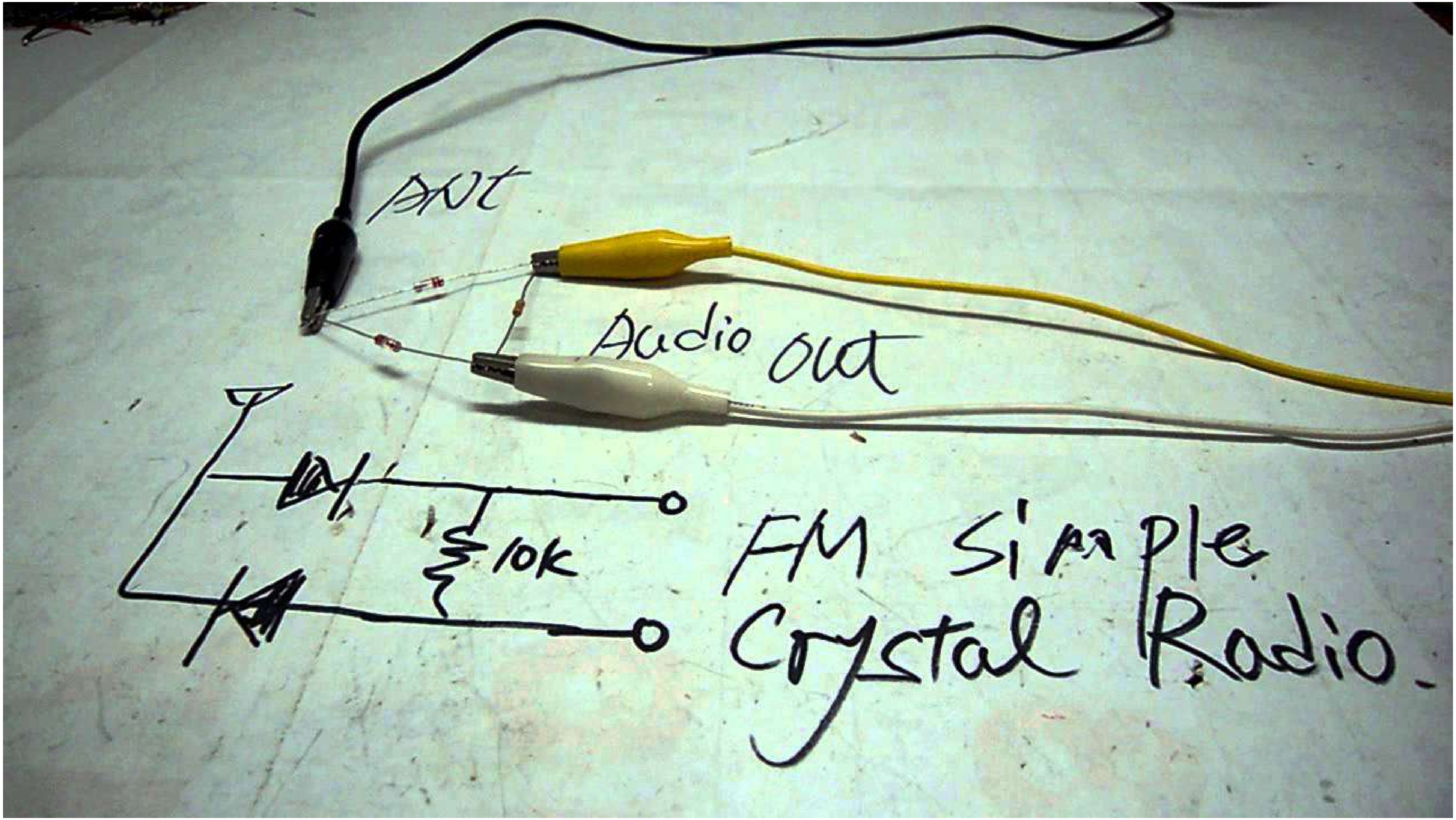

Driven Element
28mm Sides
5-15 Trimmer
Capacitor
Reflector Element
30mm Sides
Diode
1000pF
+
To Voltmeter

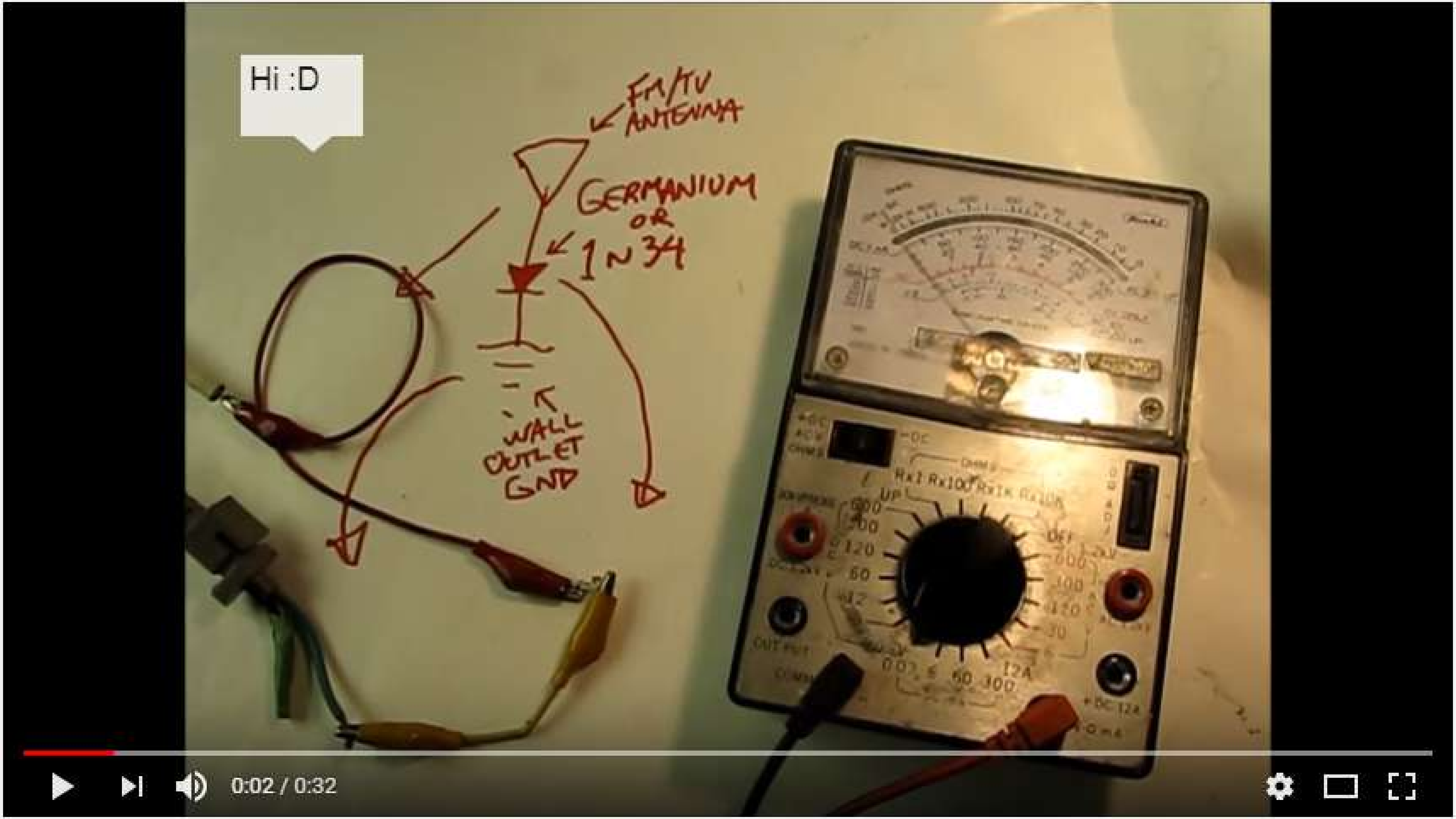



D3
D5
1SS86
D10
LED
D8
D6
D4
D2

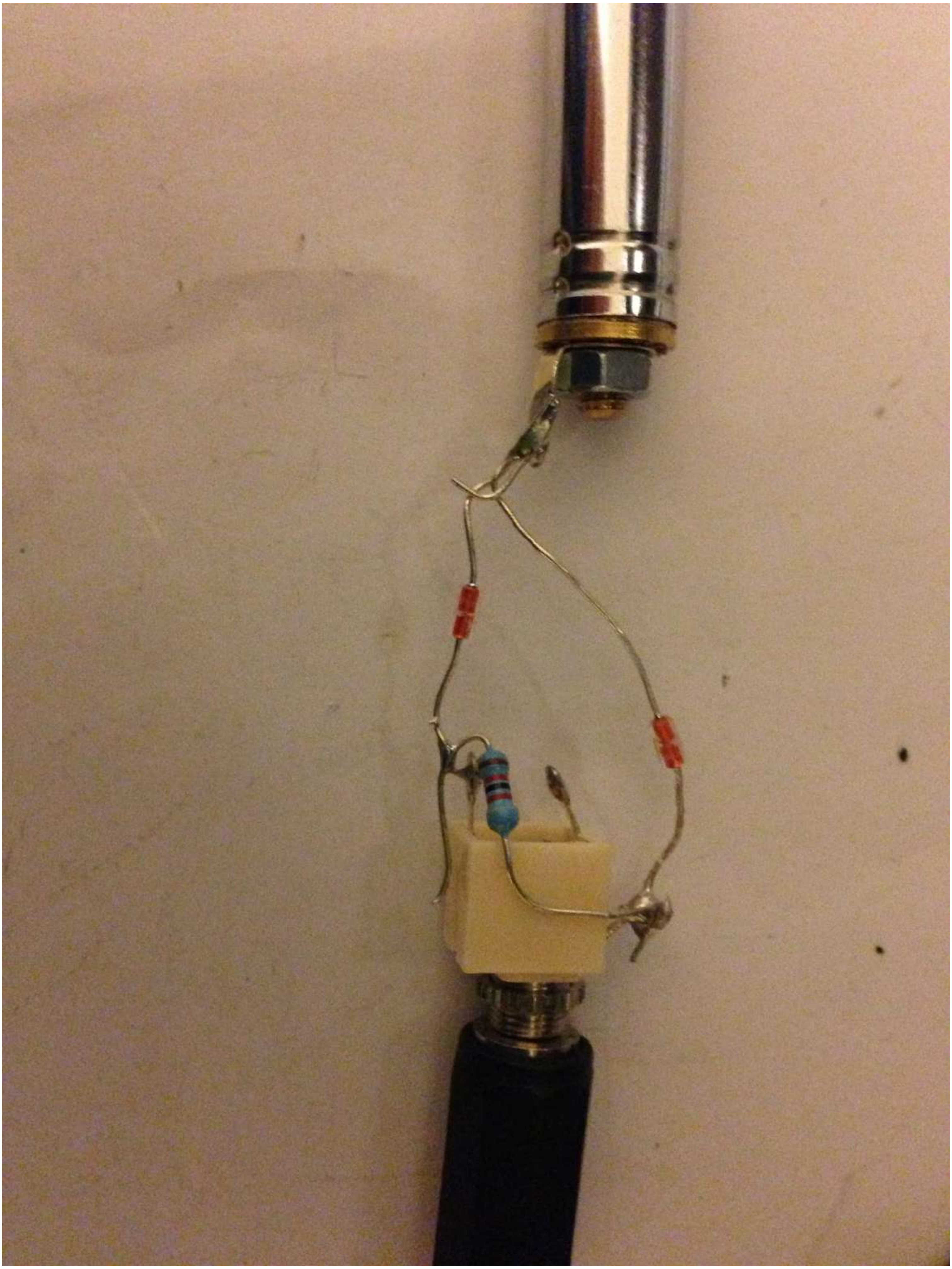


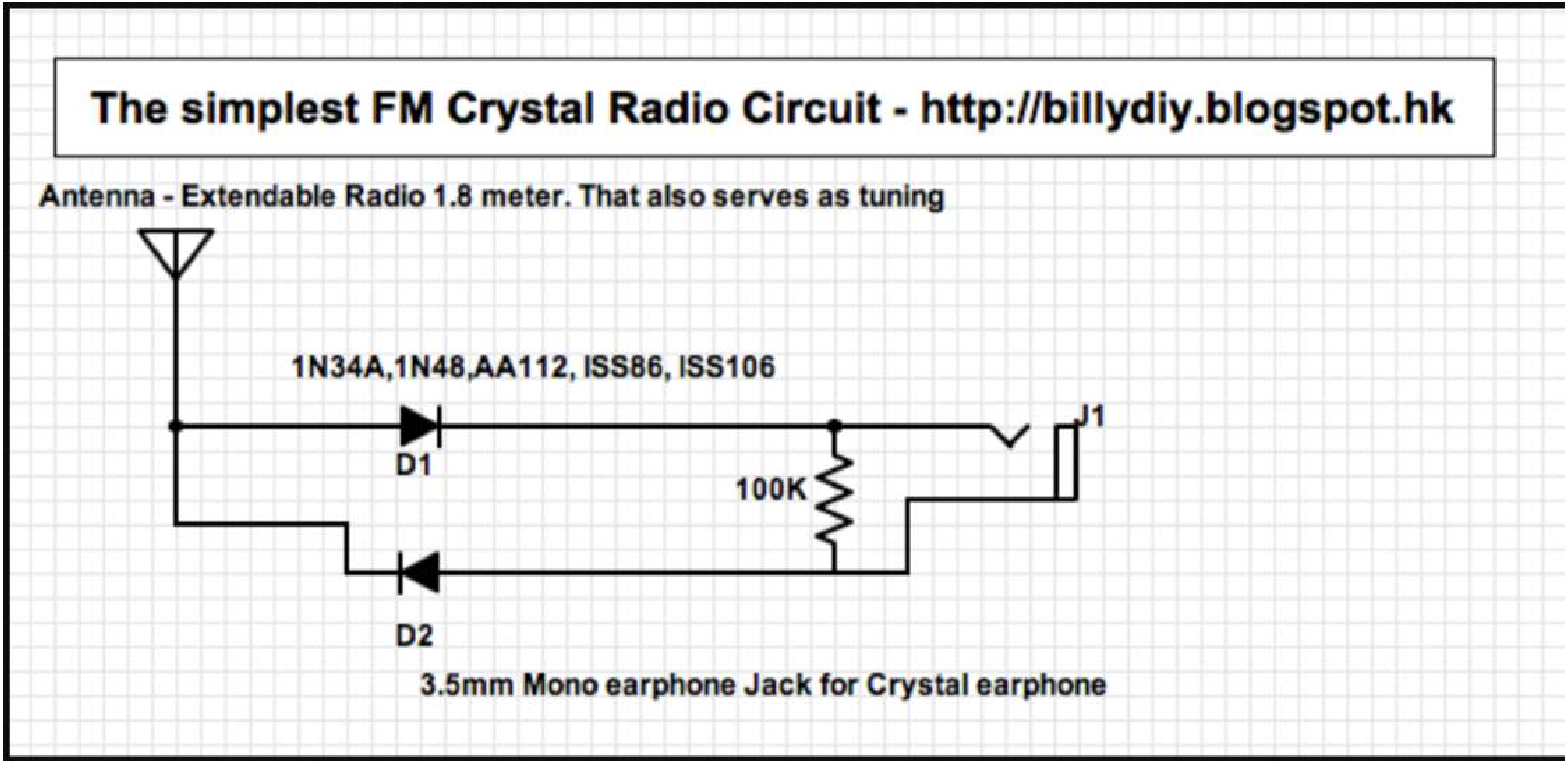
DIY Wireless Power - Part 2: Simple Wireless Power Transmission! (CB)


ANt
Audio out
10K
FM simple
Crystal Radio



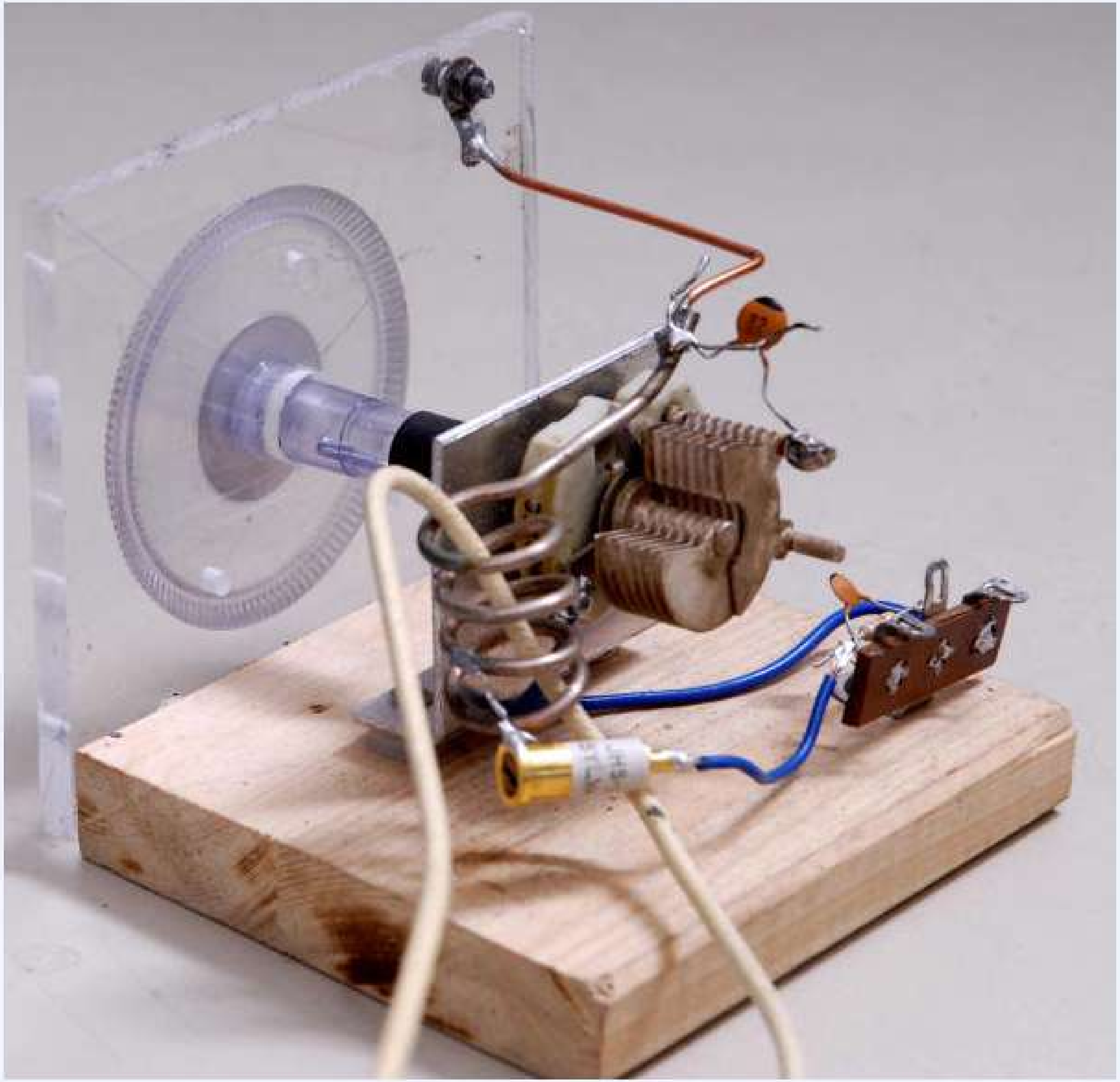
DIY Wireless Power - Part 1: TV/FM Antenna,1N34/Germanium Diode



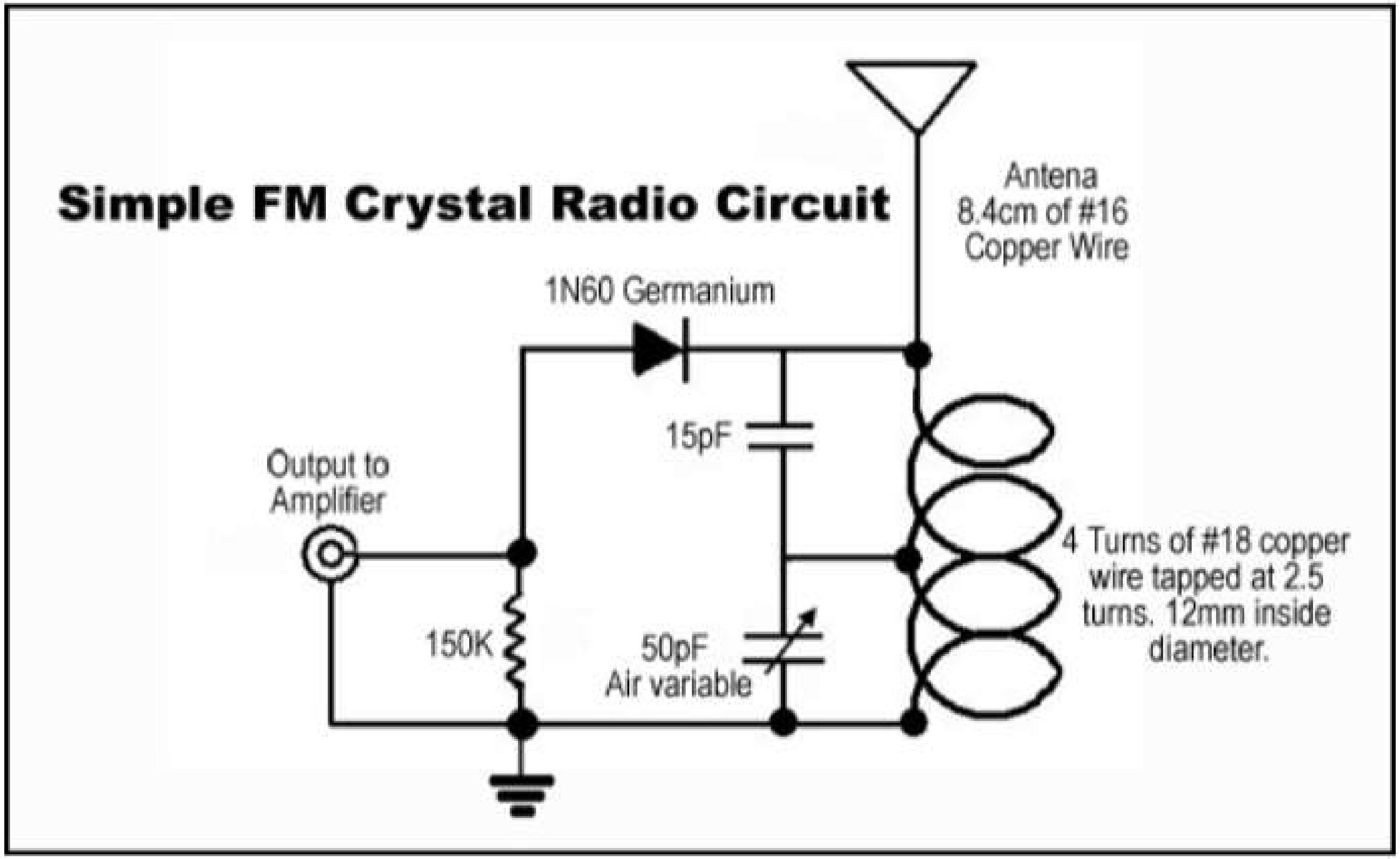

The simplest FM Crystal Radio Circuit - http://billydiy.blogspot.hk
Antenna - Extendable Radio 1.8 meter. That also serves as tuning
1N34A,1N48,AA112, ISS86, ISS106
J1
D1
100K
D2
3.5mm Mono earphone Jack for Crystal earphone

Simple crystal receiver for FM

Carlo Bramanti

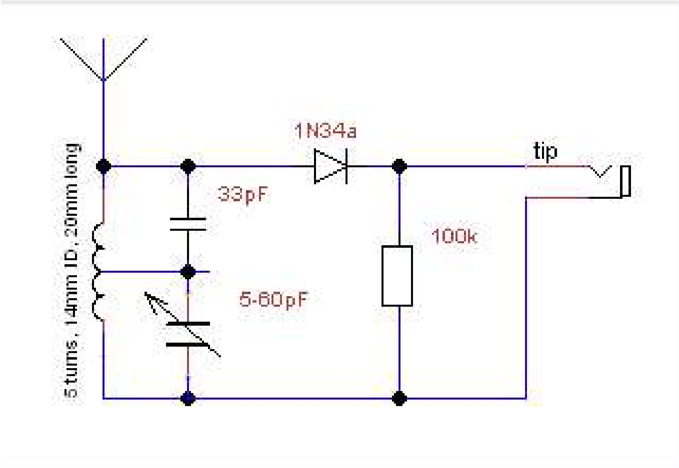


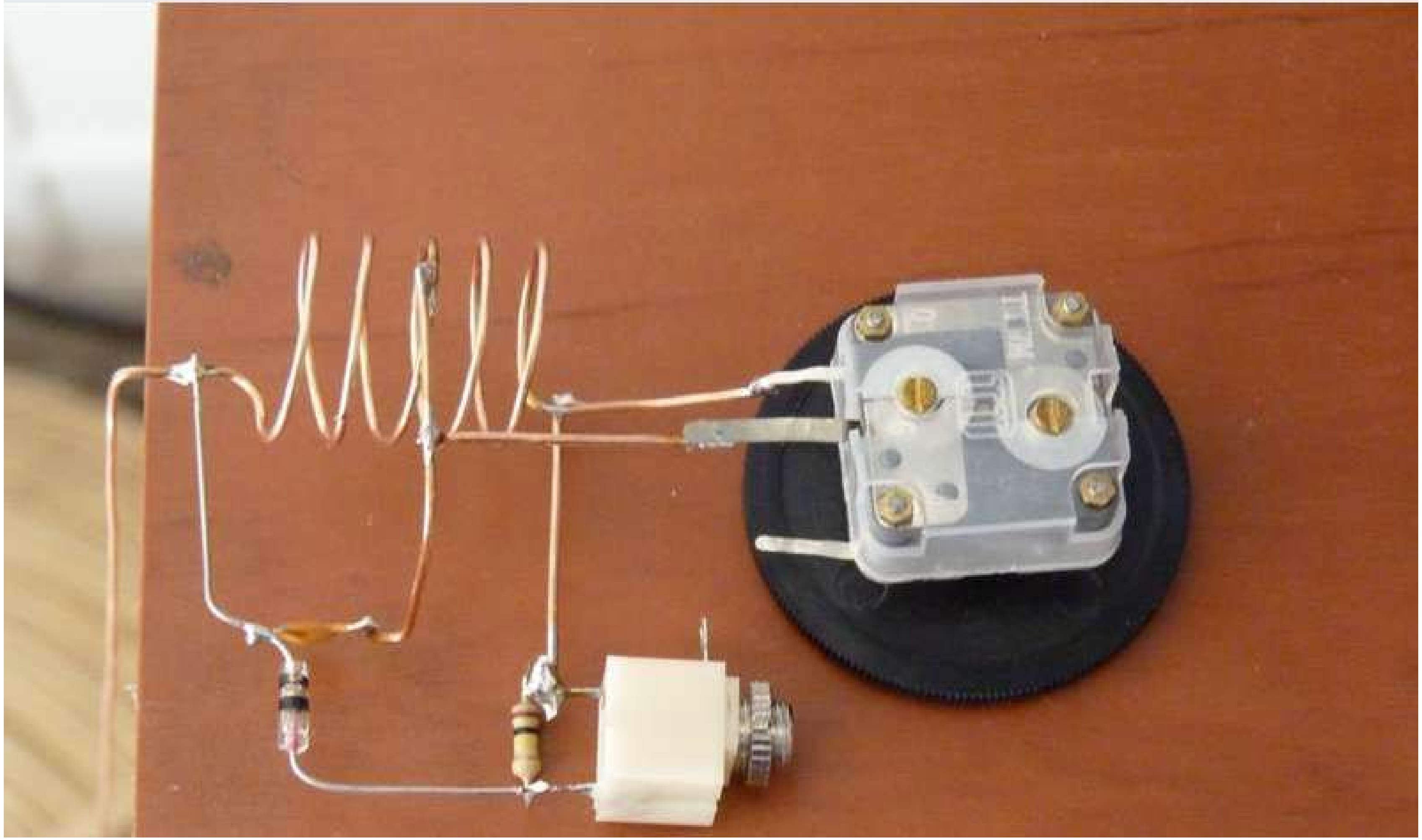
FM Crystal Radio Circuit

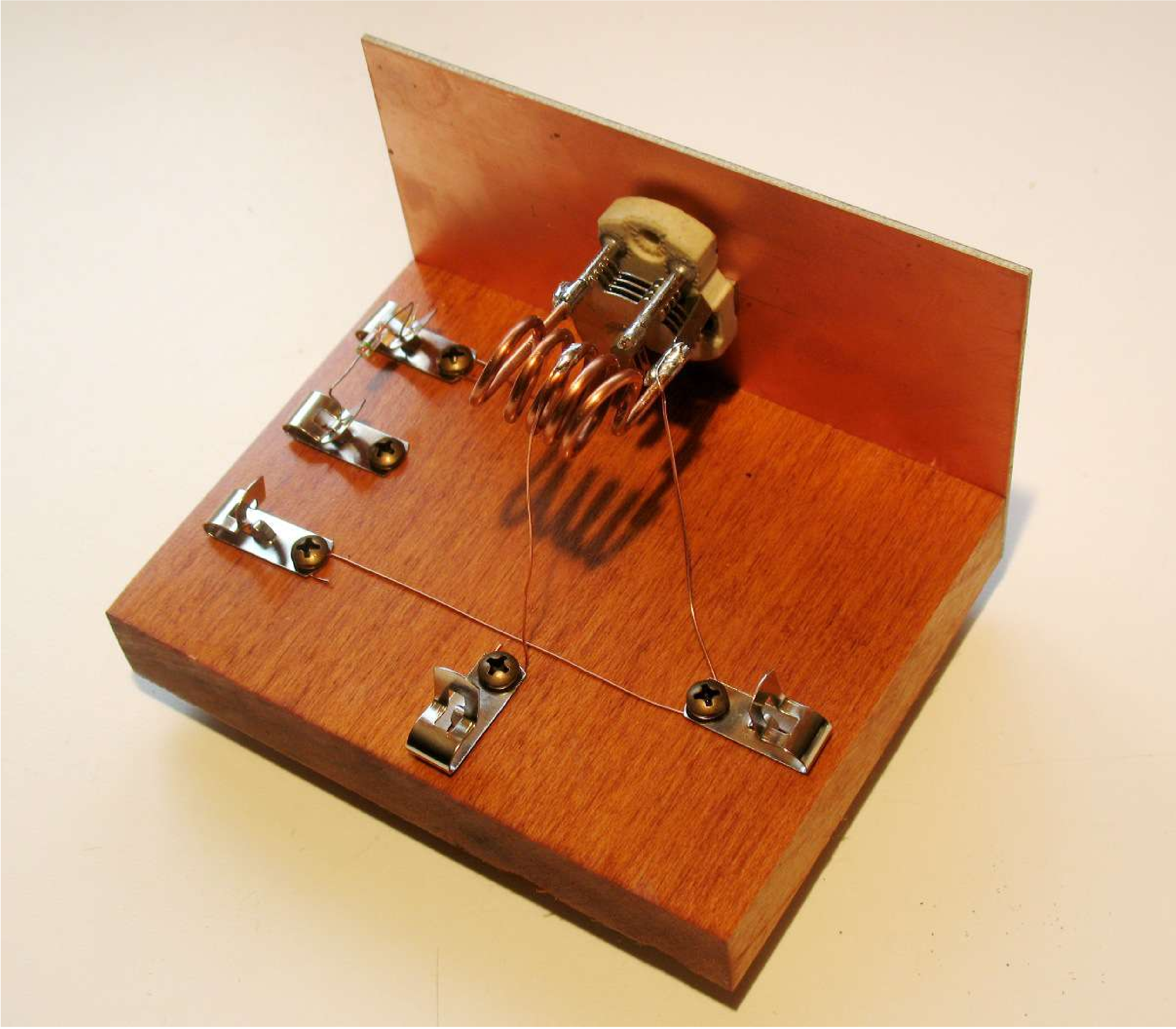


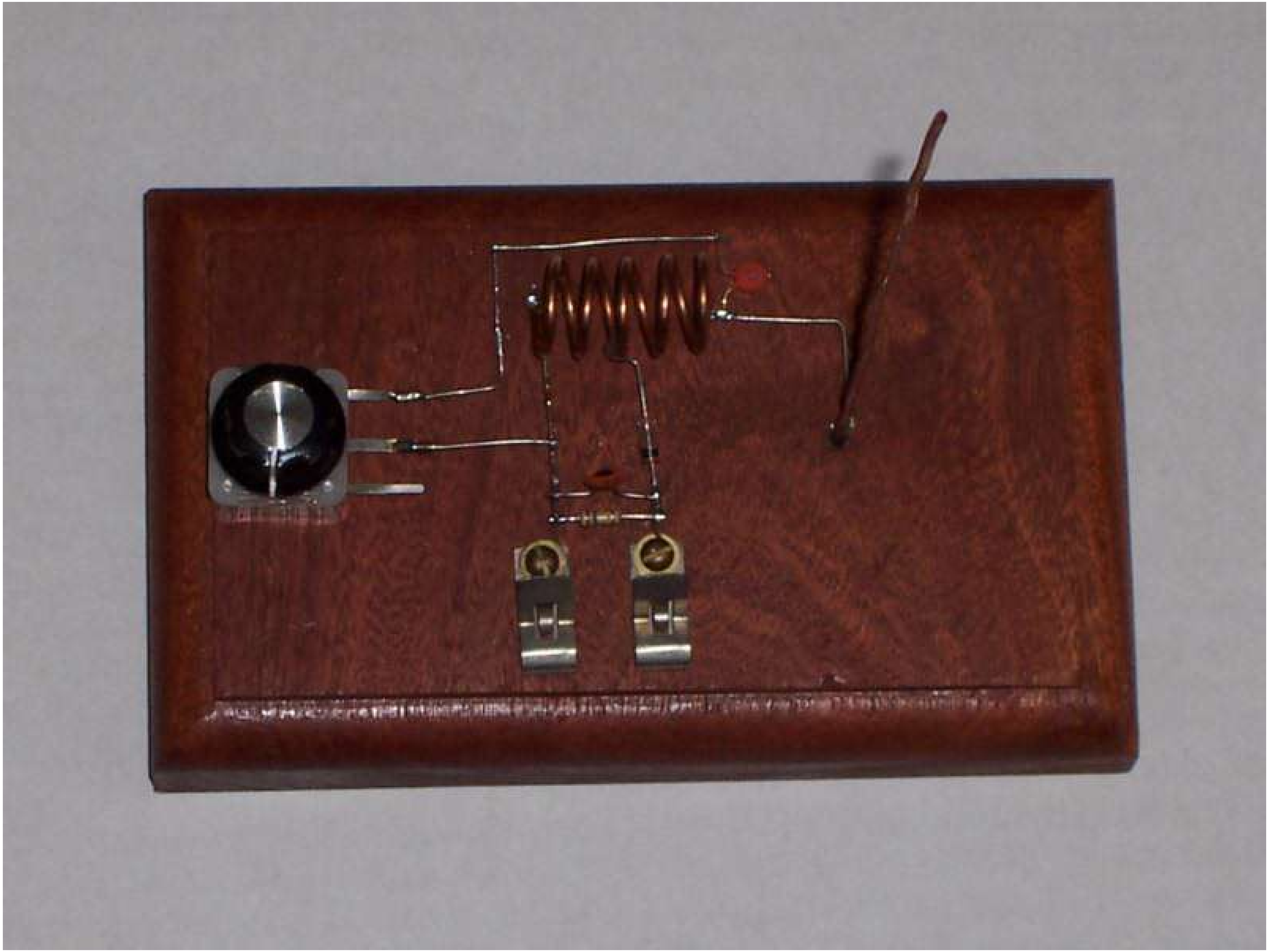
Parts List (some of these parts you can buy from our online store):

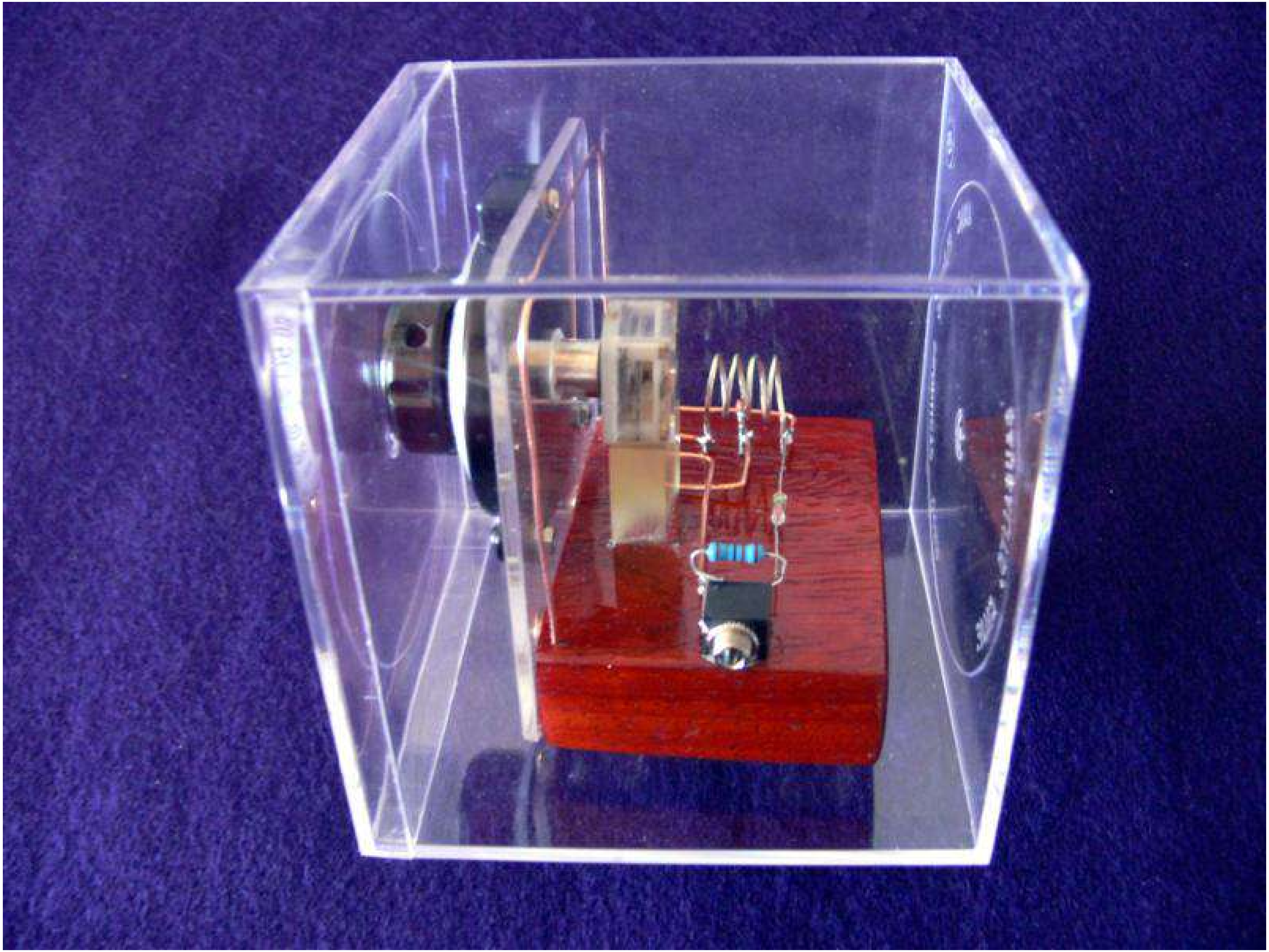
- 1N60 Germanium Diode
- 15pF Ceramic Capacitor
- 50pF Variable Capacitor
- 150K Ohm Resistor
- #16 & #18 Copper wires


1N34a
tip
33pF
100k
5-60pF
5 turns, 14mm ID, 20mm long



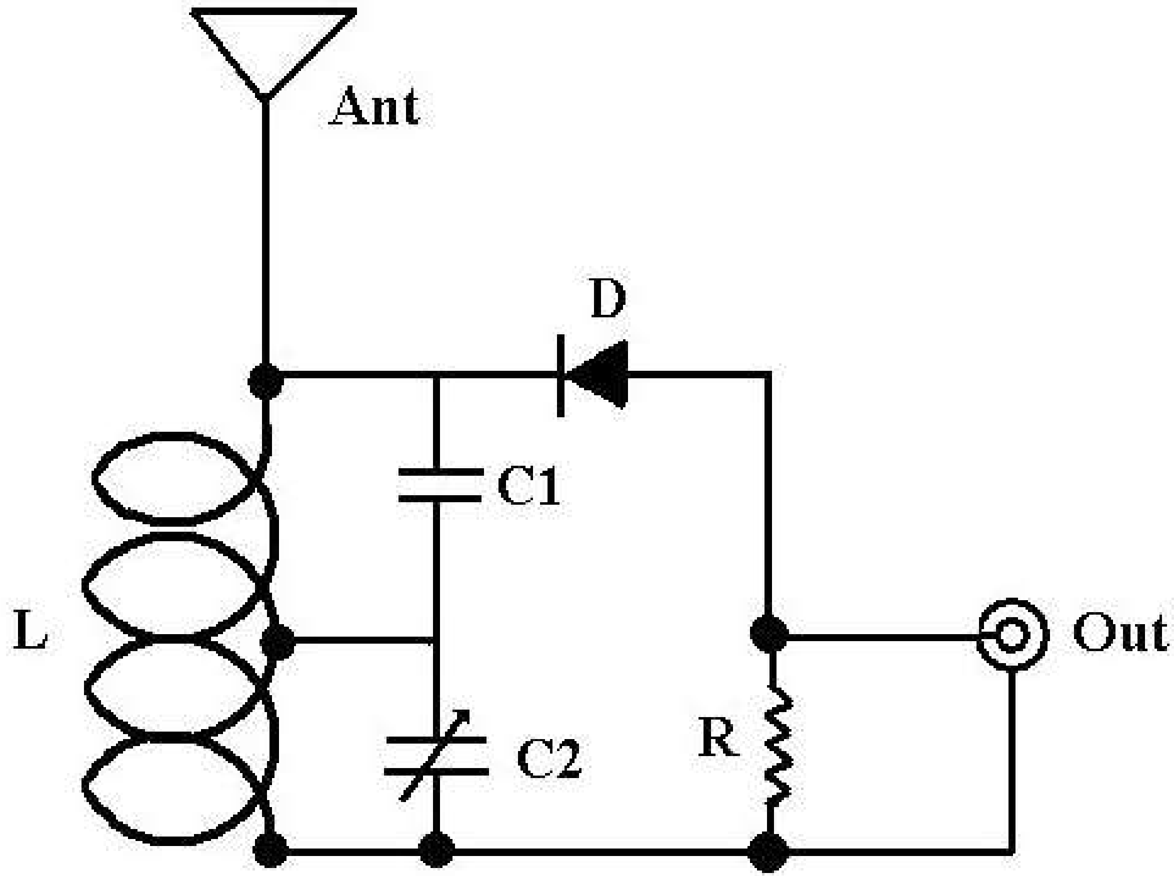


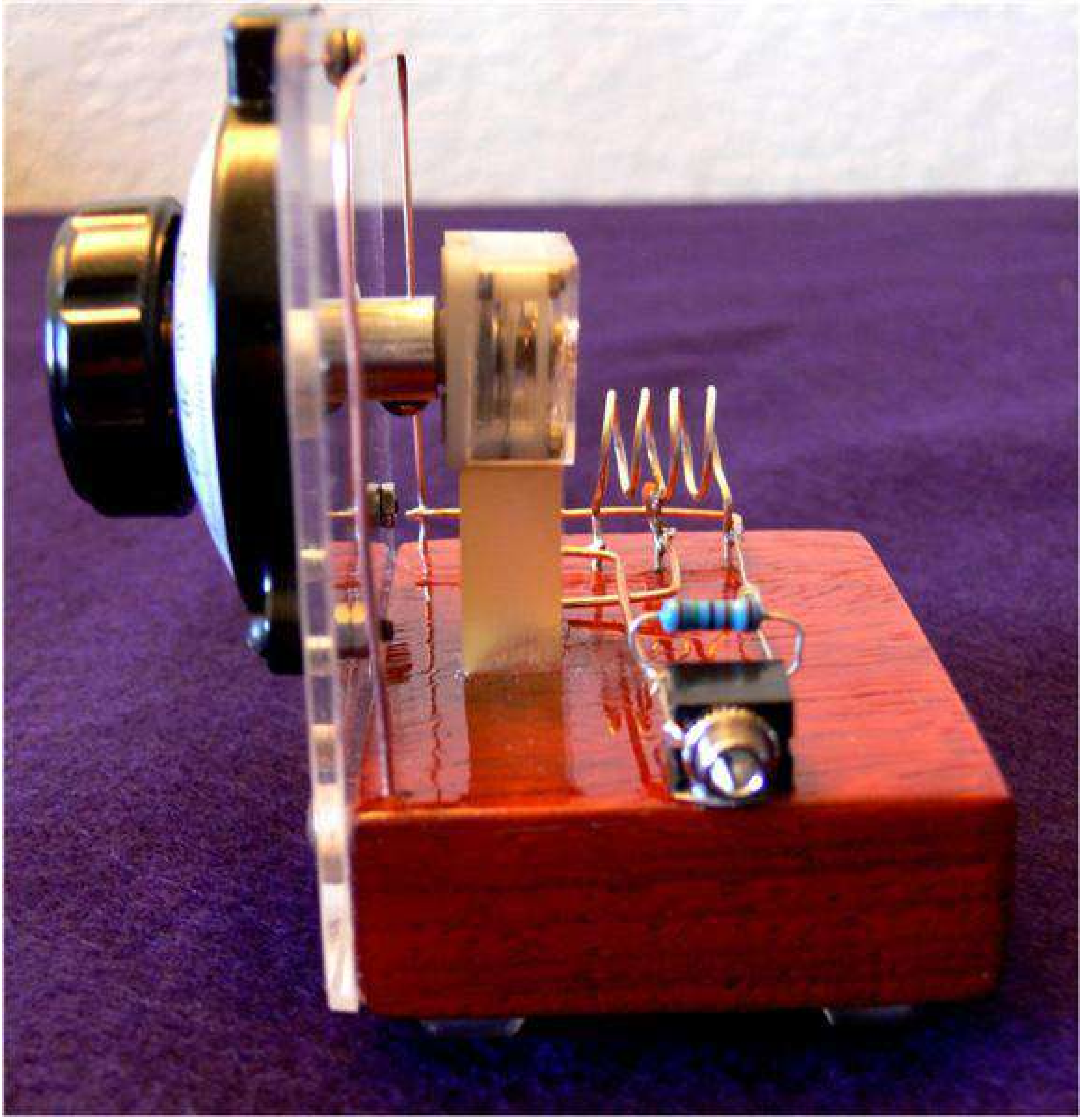


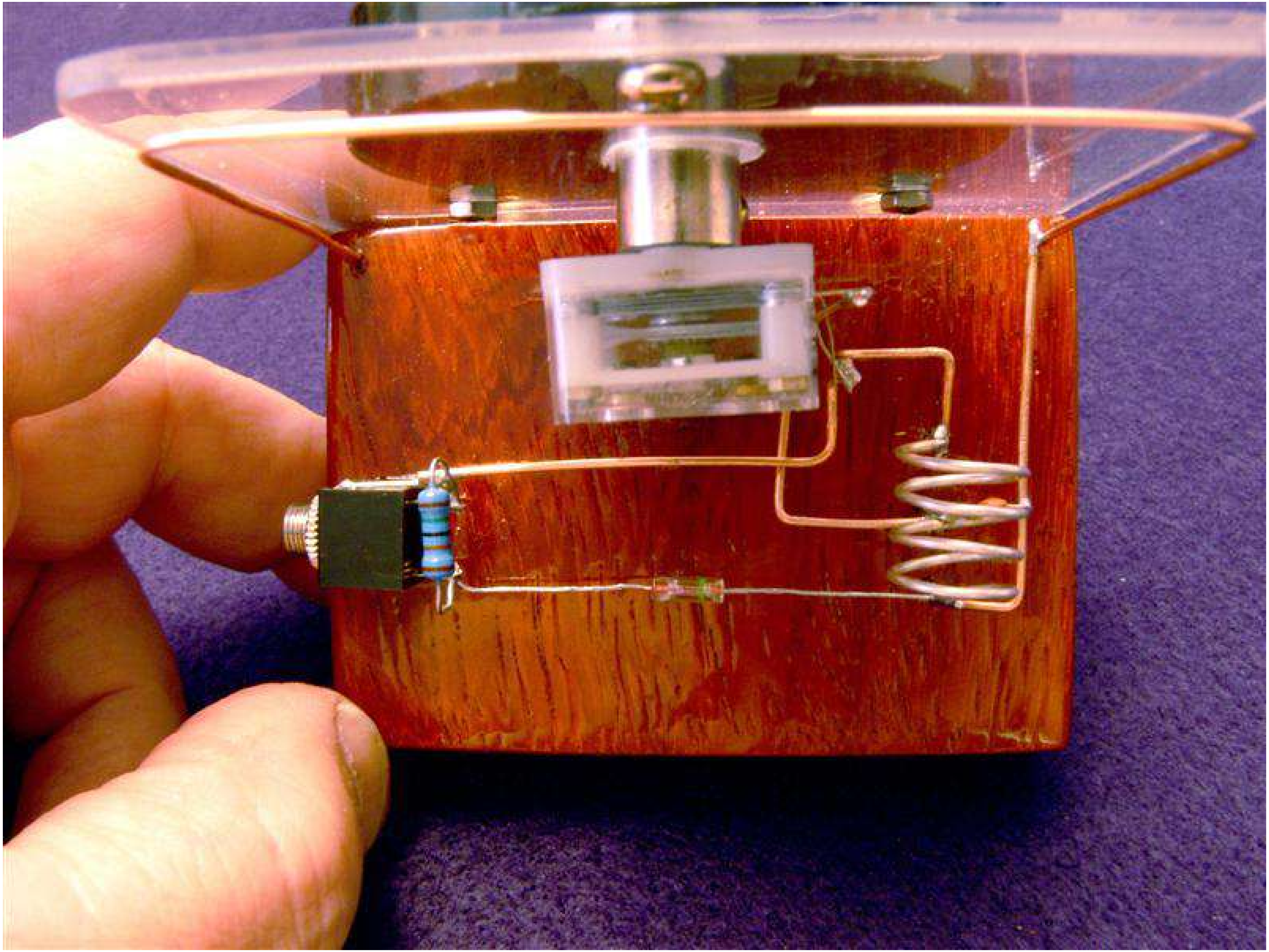


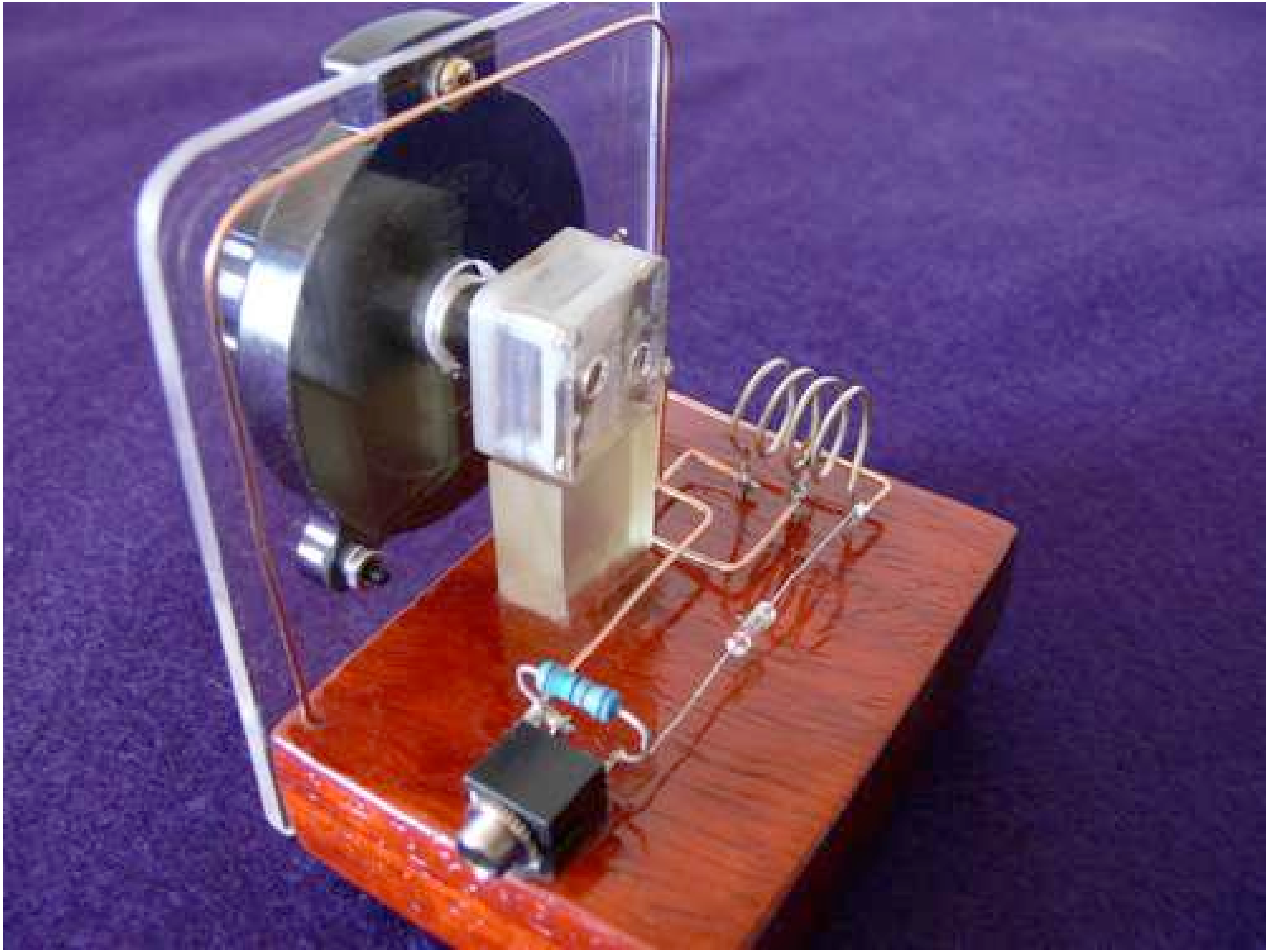
L - 4 turns #18 copper or silver wire, 12mm inside diameter, tapped at 2.5 turns
Ant - 7 inches of #18 bare copper wire
C1 - 18 pf ceramic capacitor
C2 - 50 pf air variable capacitor
D - 1N34 diode or rock crystal
R - 150K resistor

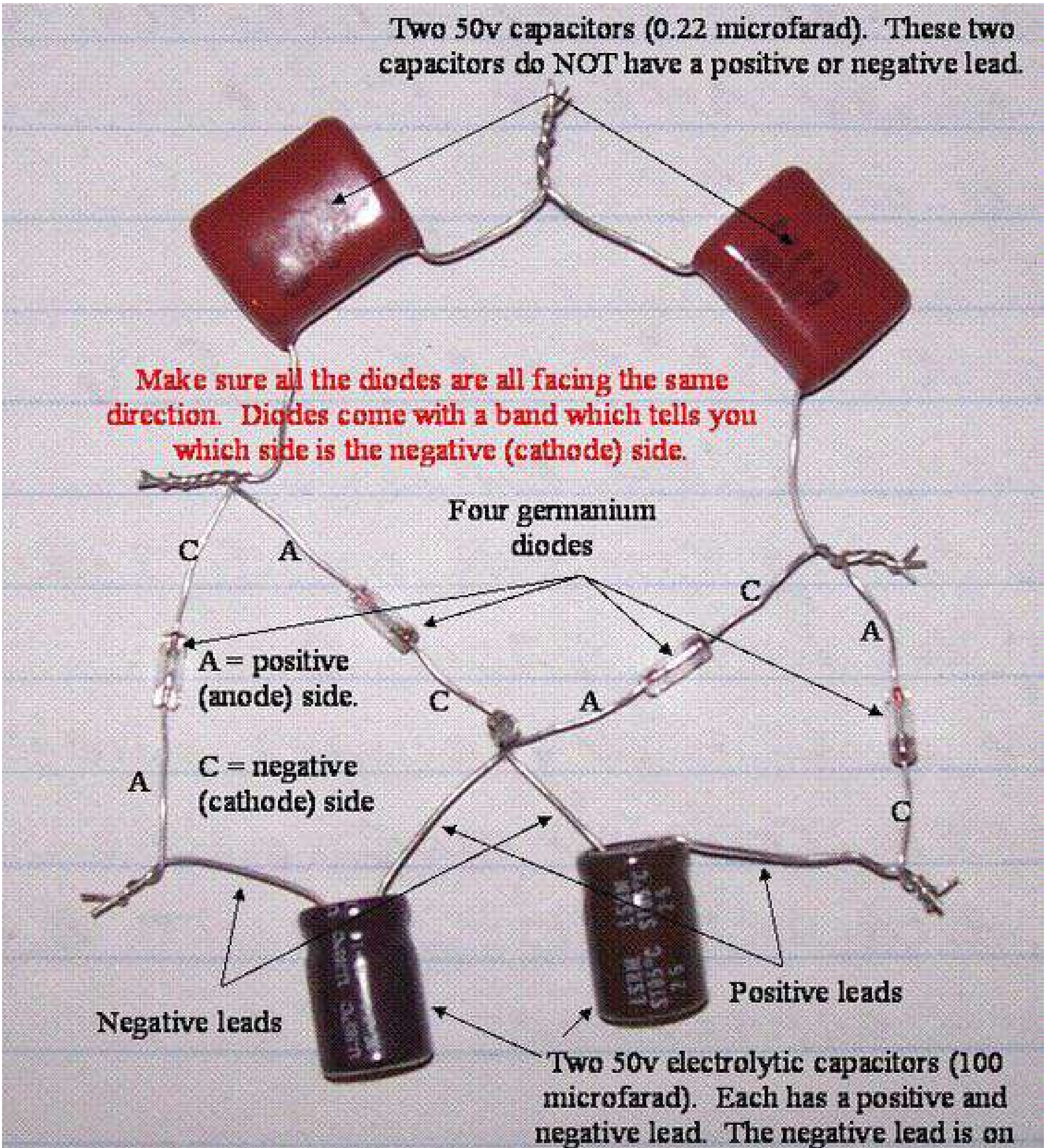
All passive components










Two 50v capacitors (0.22 microfarad). These two capacitors do NOT have a positive or negative lead.
Make sure all the diodes are all facing the same direction. Diodes come with a band which tells you which side is the negative (cathode) side.
Four germanium diodes
C
A
C
A
A = positive (anode) side.
C
A
A
C = negative (cathode) side
A
C
Negative leads
Positive leads
Two 50v electrolytic capacitors (100 microfarad). Each has a positive and negative lead. The negative lead is on the side of the capacitor with the "-" sign.

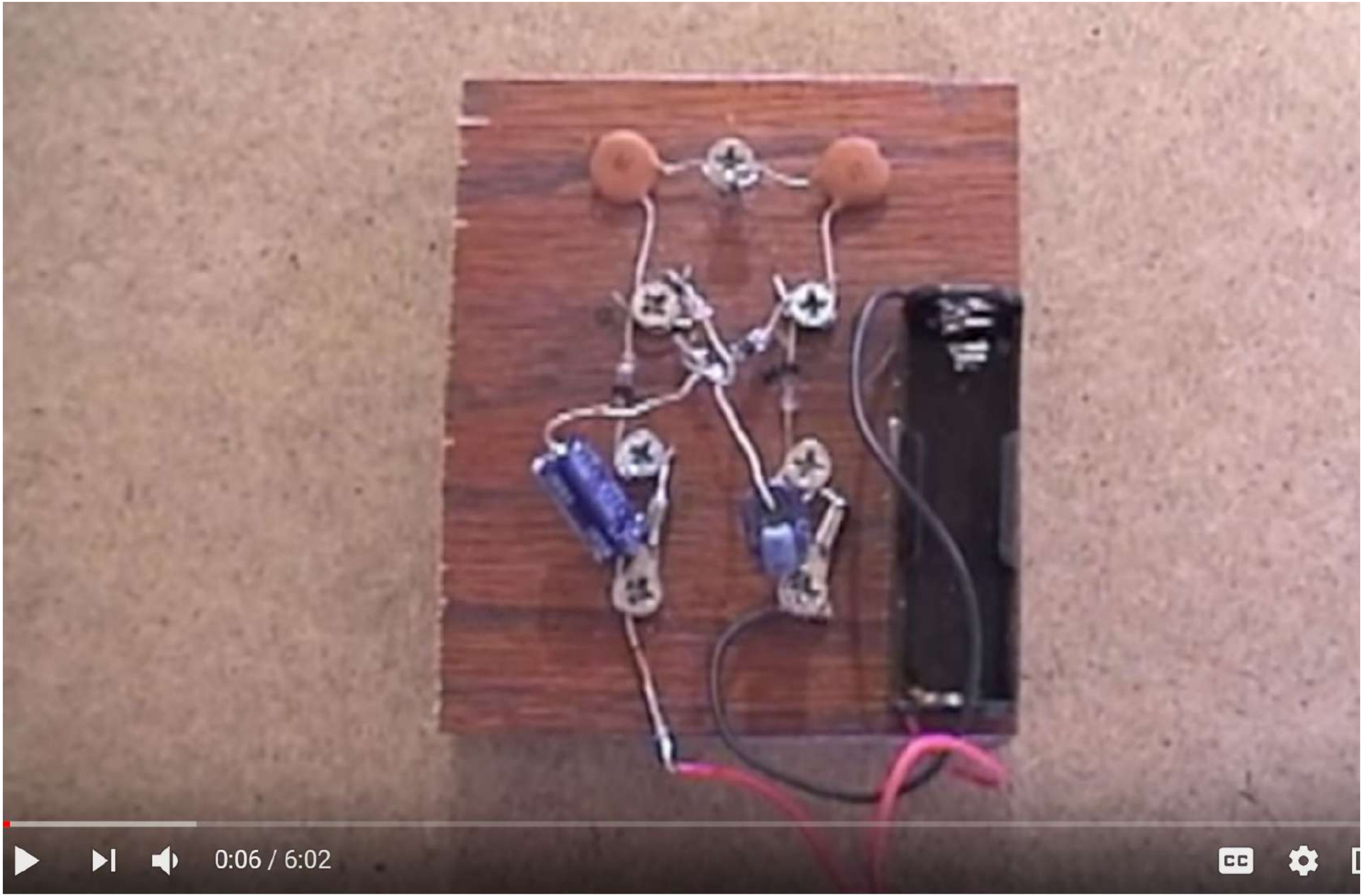
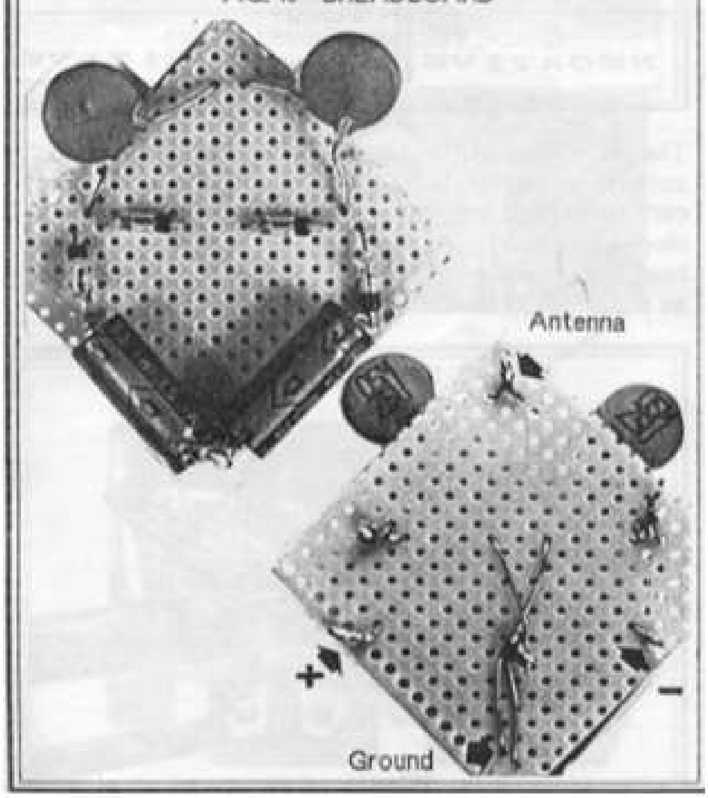
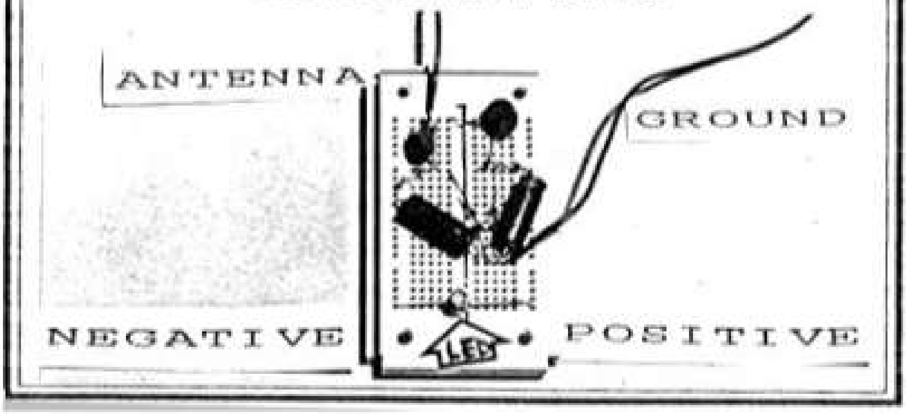

0:06 / 6:02

FIG. 10 BREADBOARD



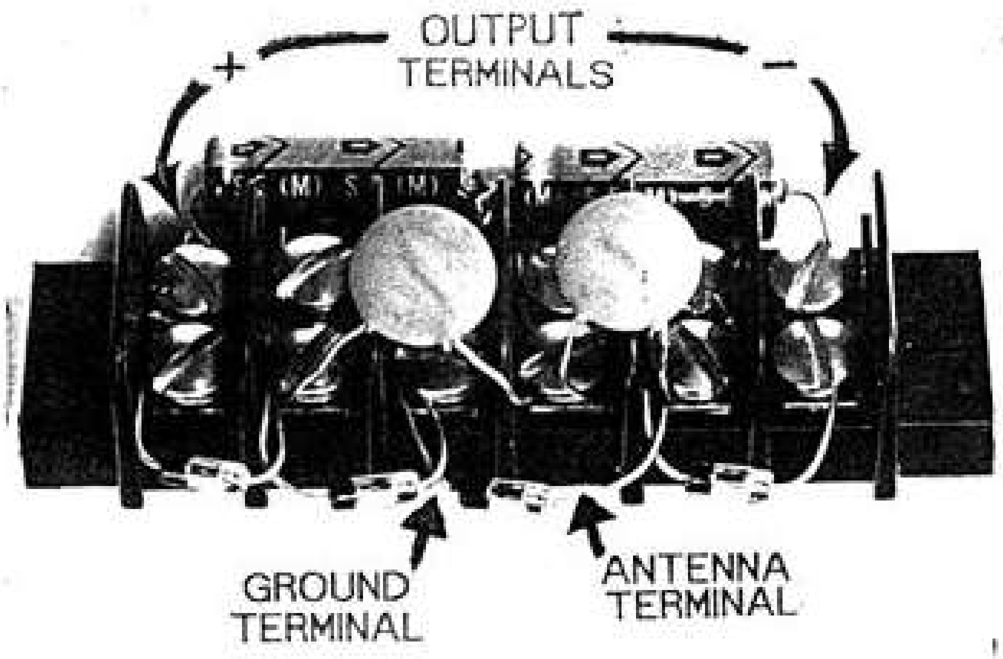
the board as shown in Figure 11. This unit is powering a small red LED indicated by the arrow.

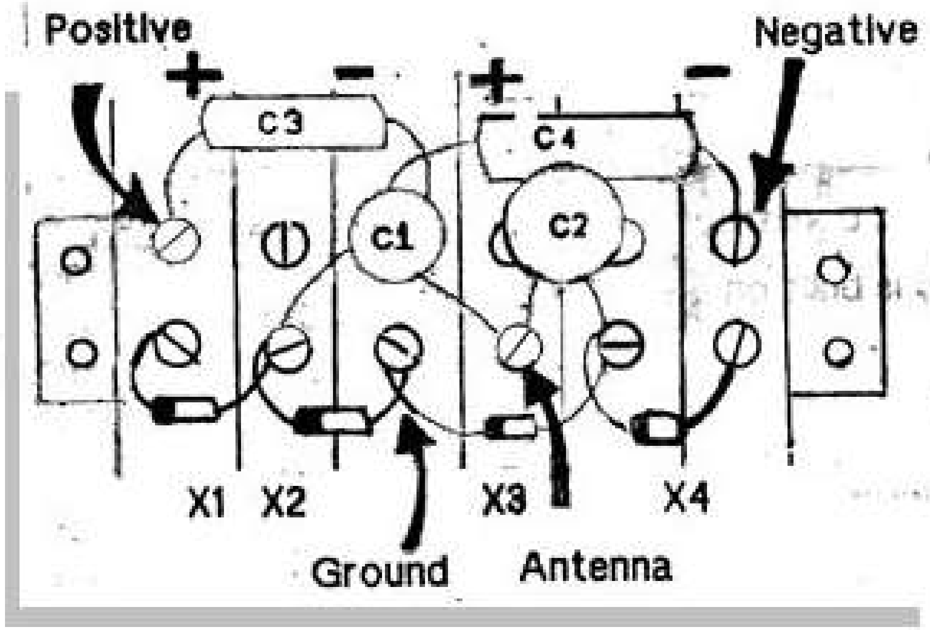
FIG. 11 EXPERIMENT BOARD



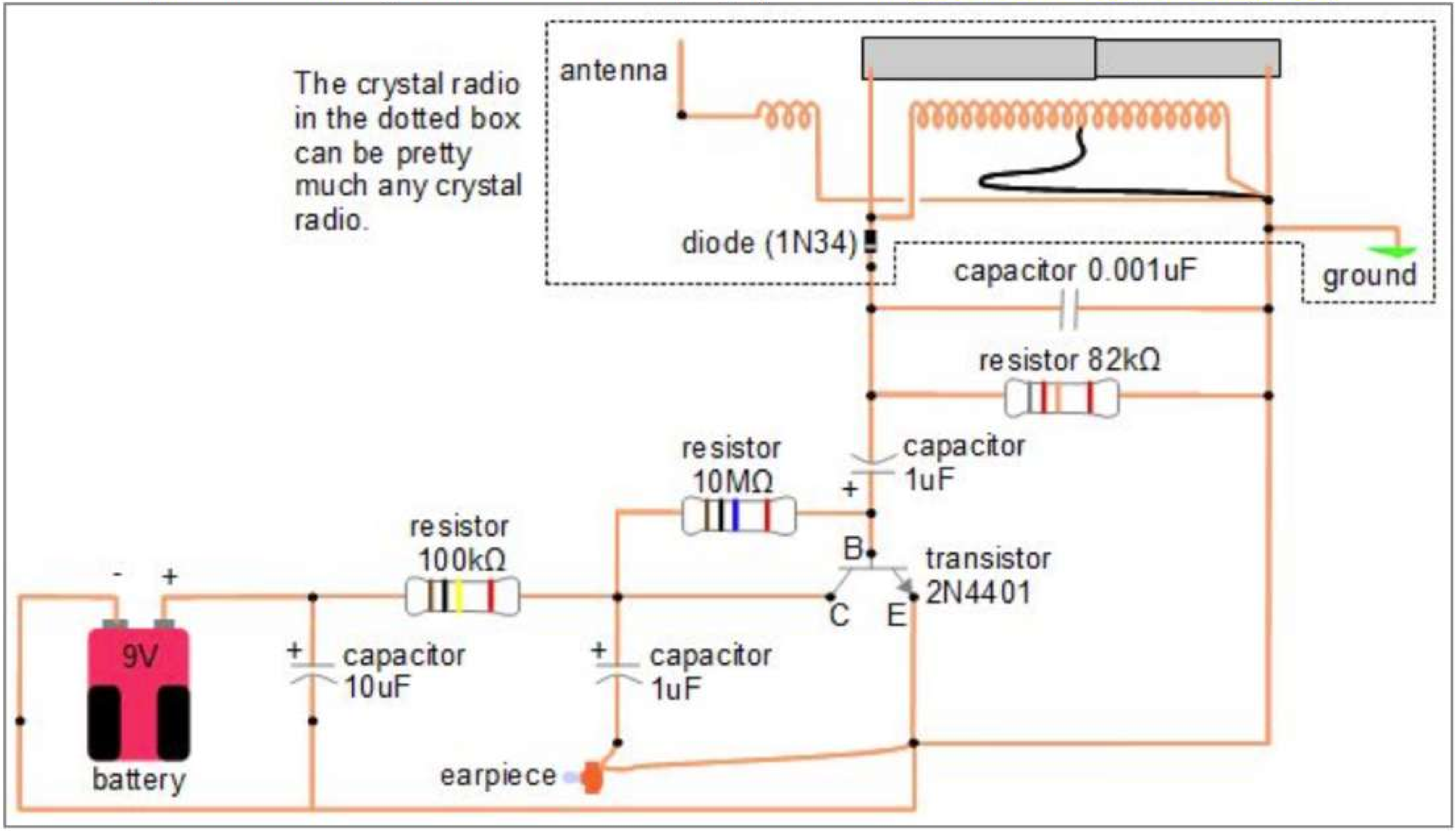
ıade to the twisted ends of the ceramic capacitors. When soldering the leads of the 1N34 diodes, care must be taken t

FIG. 9 TERMINAL STRIP



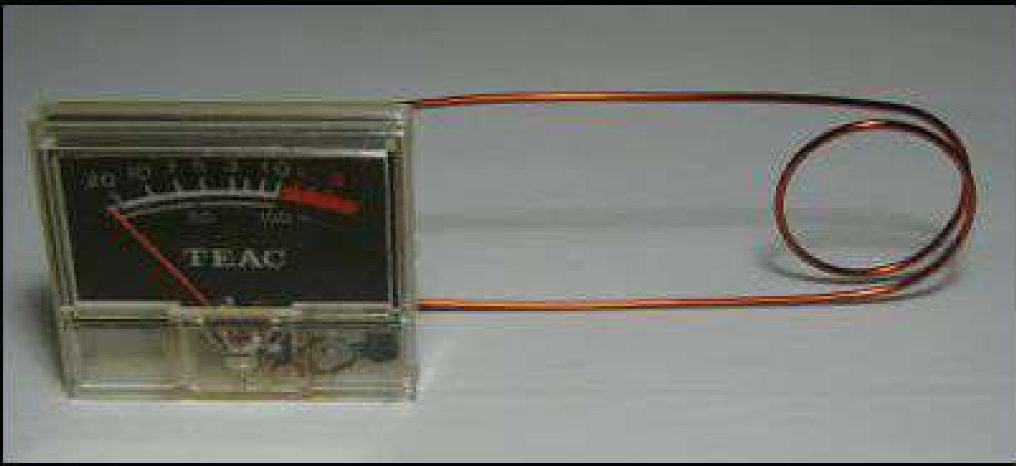


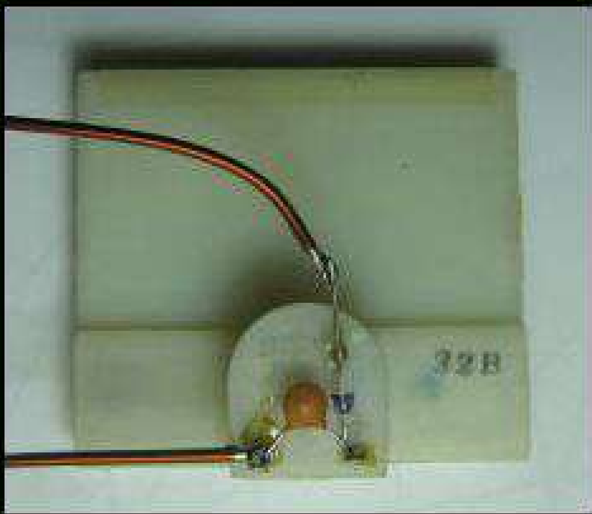
Amplifier circuit. The crystal radio used for example purposes is the crystal radio made from scraps here.

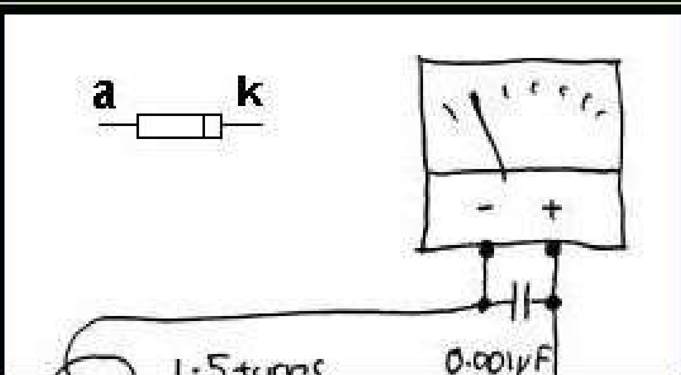


SATURDAY, NOVEMBER 13, 2010

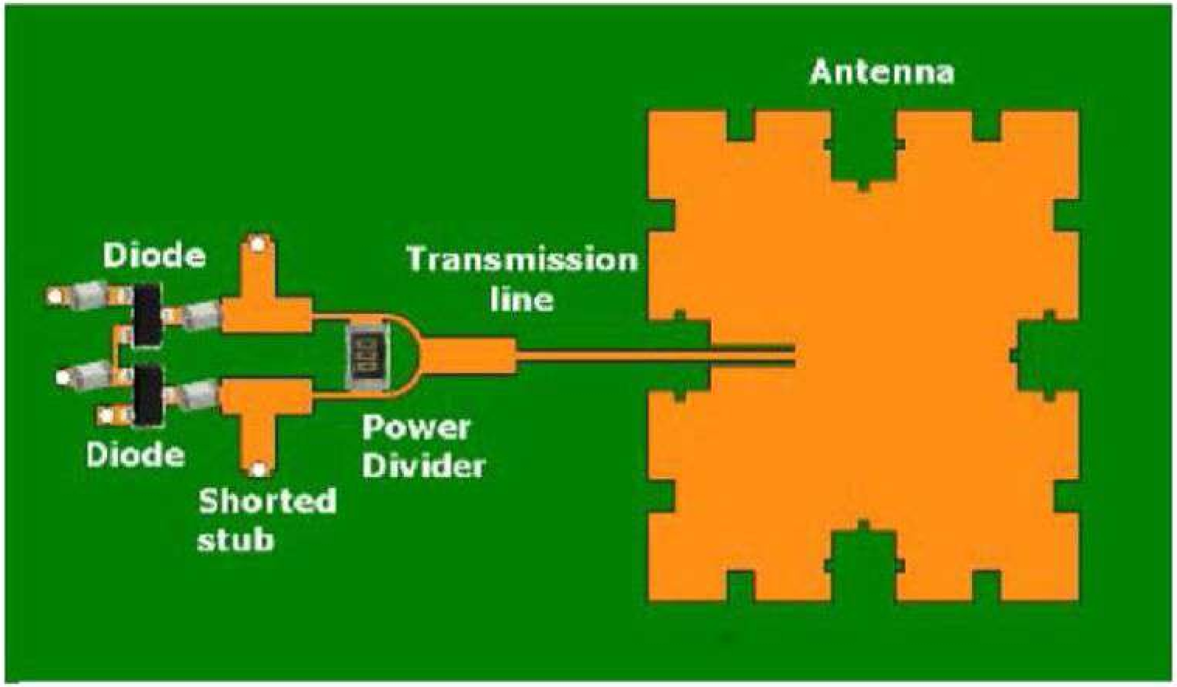
SIMPLE FIELD STRENGTH METER

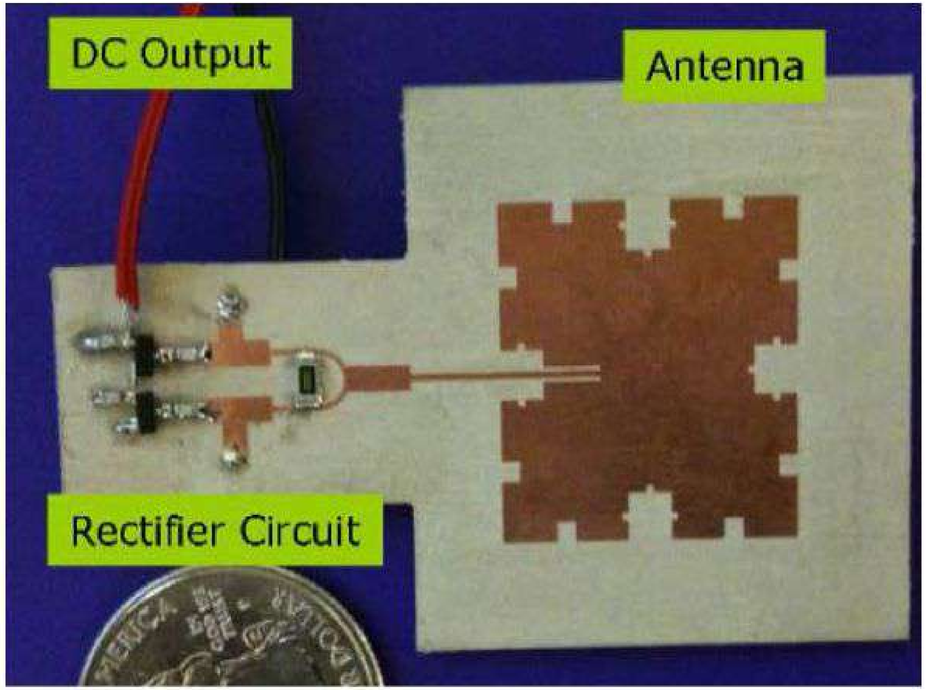






MY


Antenna
Diode
Transmission line
Diode
Power Divider
Shorted stub


DC Output
Antenna
Rectifier Circuit

4. Results and Analysis

The simulated and measured results at the output voltage of voltage multiplier circuit are shown graphically in **Figure 8**. From the graph analysis, the simulated and the measured results agree considerably with each other. The measured results are shown to be better than the simulation results. The reason behind this may be due to the uncertainty in series resistance value of the diode obtained from SPICE parameters in modeling as explained in Equation (5). This resistance vale of diodes in practical circuit may be lower than in the model, which provides fast discharge path, in turn rise in voltage as passes through the stages and reaches to final output. In this work, the DC output voltages obtained through simulation and measurement at 0 dBm re 2.12 V and 5.0 V respectively. These results are comparatively much better than in ref. [9], where in at 0 dBm, 900 MHz they achieved 0.5 V and 0.8 V through simulation and measurement increasing to 1.4 V, 1.67 V, 1.87 V and 2.12 V for 4, 5, 6 and 7 stages respectively compared to 2 mS as shown in [10]. **Figure 12** shows that the conversion ratio of 22 is achieved at 0 dBm input power and drops to 2.5 at −40 dBm. The highest value at 0 dBm is due to the innate characteristics of the zero bias Schottky diodes which conduct fairly well at higher input voltages.

5. Conclusion

From the experimental results, it is found that the pro-

Table 2. Component used in 7 stage voltage multiplier.

Name of component	Label	Value
Stage capacitors	C_1 - C_{14}	3.3 nF
Stage diodes	D_1 - D_{14}	HSMS 2850
Filter capacitor	C_L	100 nF
Load resister	R_L	100 kΩ

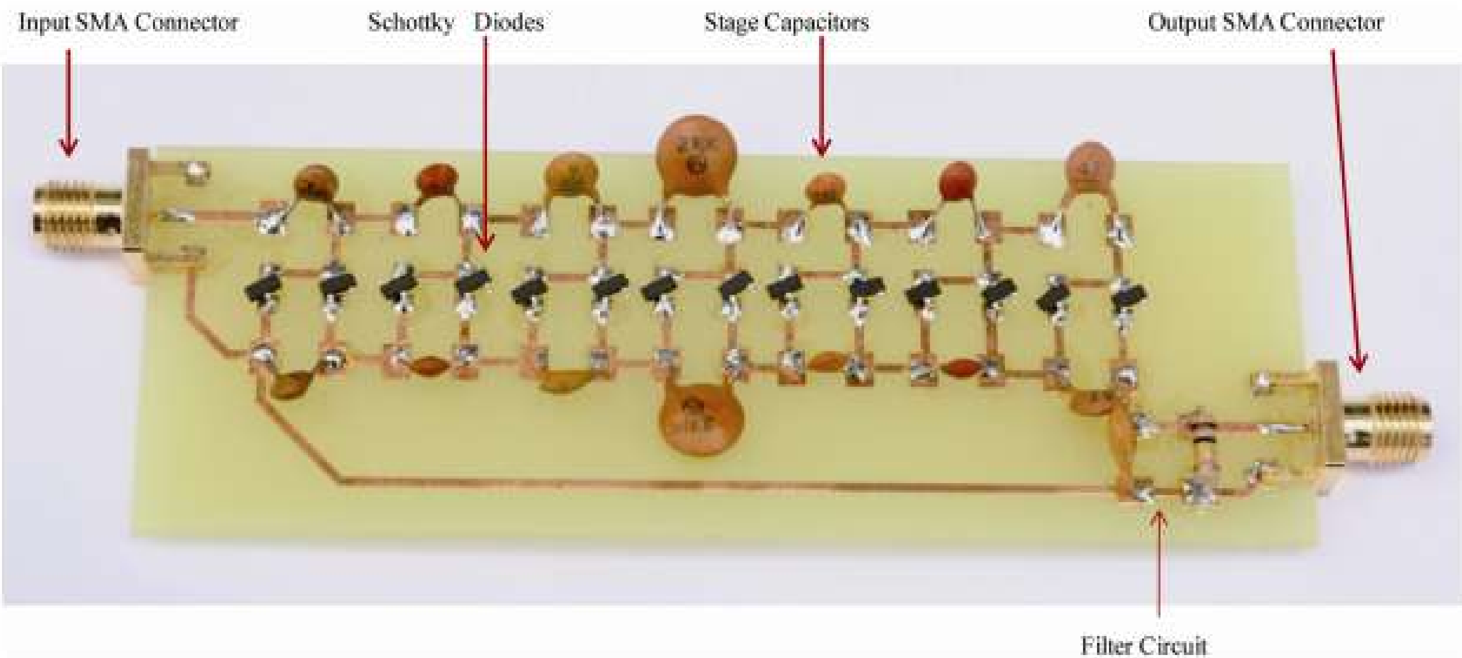


Figure 7. Photograph of assembled circuit board.

sign in this paper uses a capacitor across the load to store and provide DC leveling of the output voltage and its value only affects the speed of the transient response. Without a capacitor across the load, the output is not a good DC signal, but more of an offset AC signal.

In addition to the above, an equivalent load resistor is connected at the final node. The output voltage across the load decreases during the negative half cycle of the AC input signal. The voltage decreases is inversely proportional to the product of resistance and capacitance across the first stage was 3.3 nF, the second stage was 1.65 nF, third stage was 825 pF, fourth stage was 415 pF and so on. But keeping in view of testing, the capacitance values were chosen to have a close match with the standard available values in the market.

Simulation was carried out through 4 to 9 voltage doubler stages. Based on results obtained a 7 stage doubler is best to implemented for this application.

The design of the printed circuit board (PCB) was carried out using DipTrace software. The material used to

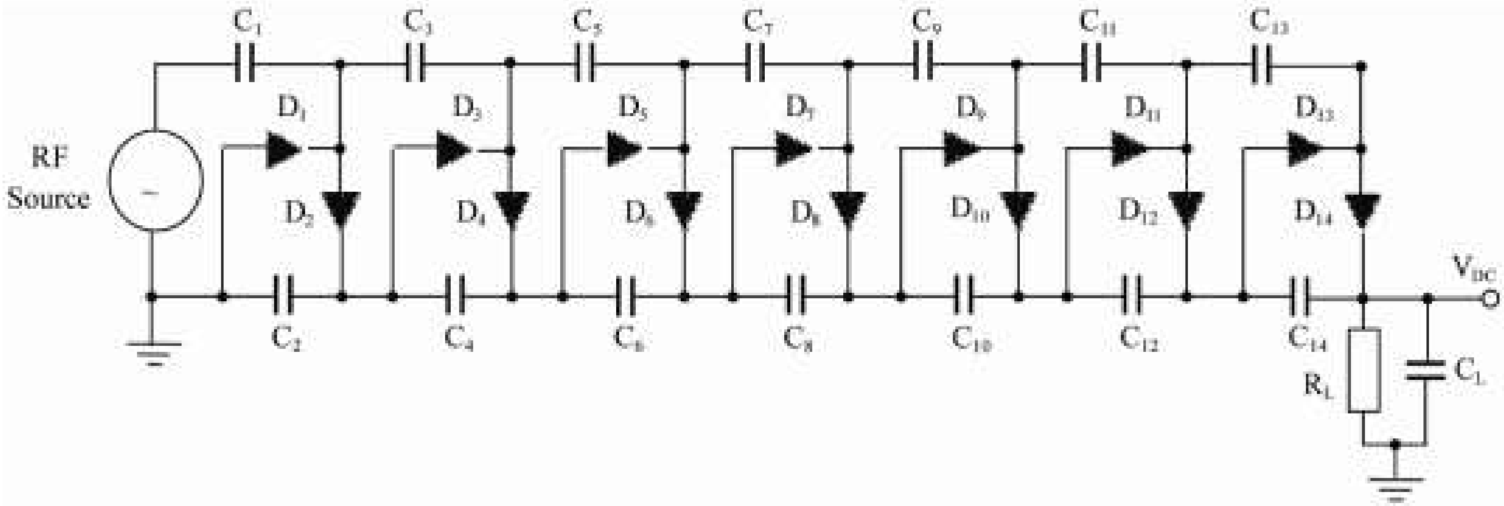


Figure 6. Schematic of 7 stage voltage multiplier.

Copyright © 2012 SciRes.

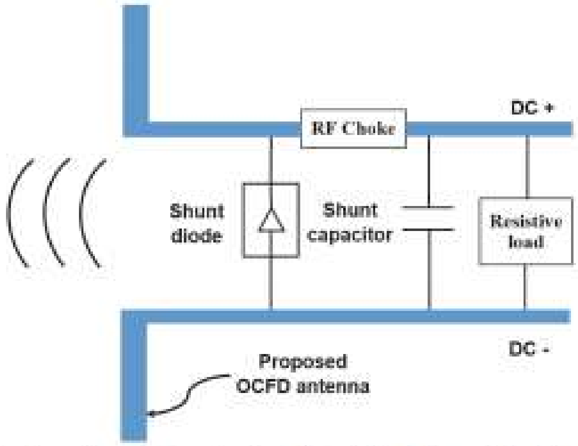


Fig. 9. Configuration of a single shunt diode (Class F) rectifier with a dipole antenna.

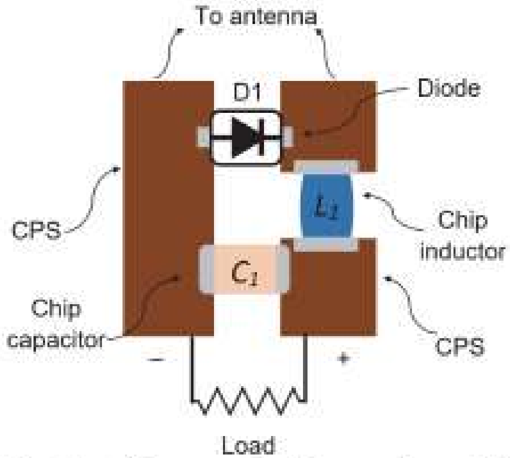


Fig. 10. Configuration of the proposed rectifier on coplanar striplines (CPS).

TABLE III
CIRCUIT COMPONENTS USED IN THE DESIGN

Component name	Nominal Value	Part number and supplier
D1	Schottky diode	SMS7630-079LF, Skyworks
L1	47 nH chip inductor	0603HP47N, Coilcraft
C1	100 nF chip capacitor	GRM188R71H104JA93D, Murata

antenna have a radius of 50 mm and a circumference angle of

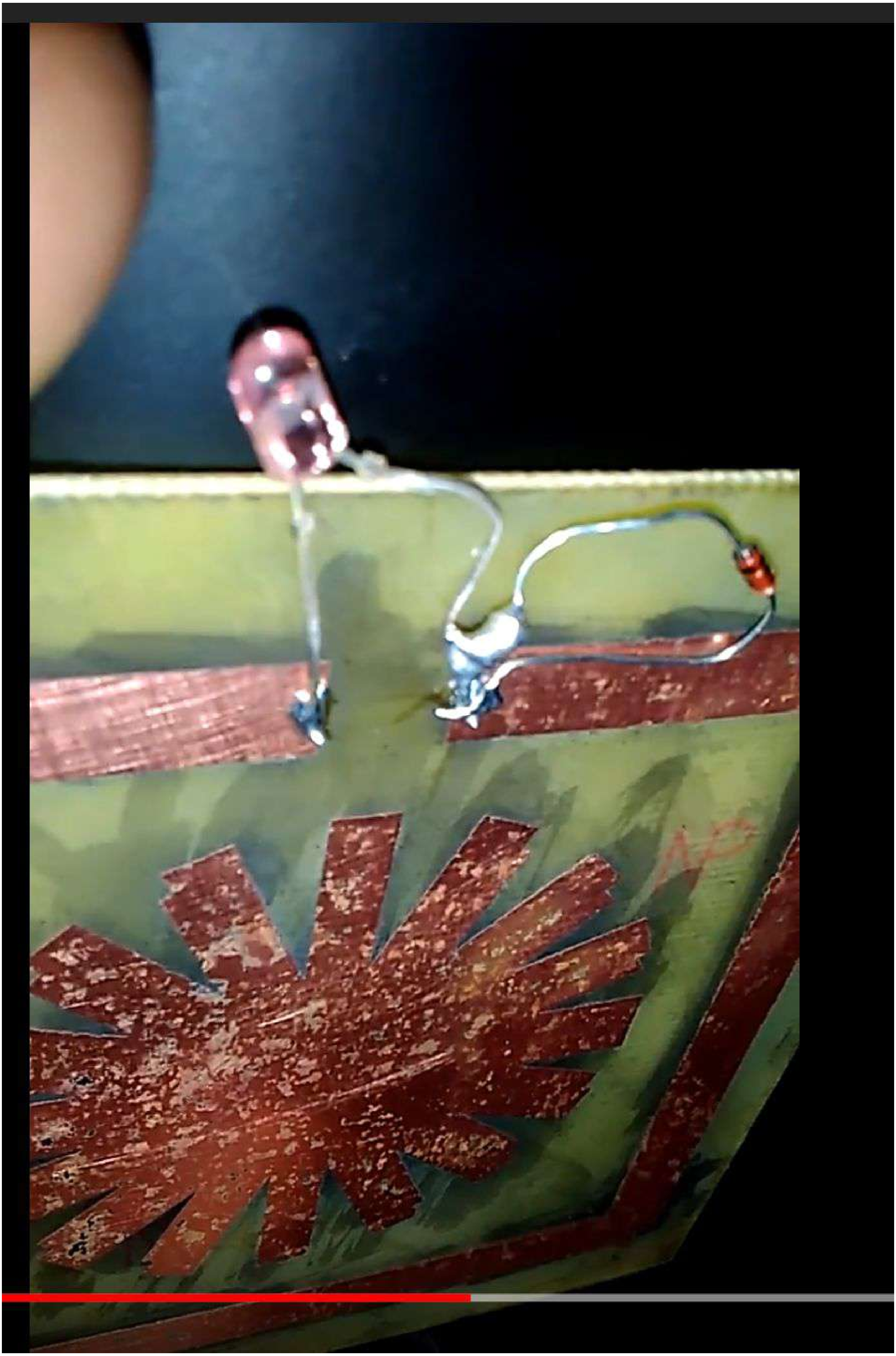
respectively. While the imaginary part of the proposed OCFD is around 0 Ω at resonant frequencies 0.6 GHz, 1.2 GHz and 2.4 GHz, which are f_0, $2f_0$, and $4f_0$ respectively. These results have demonstrated that the simulated results agree with the OCFD theory as discussed in Section III–A. Furthermore, the imaginary part of the impedance of the antenna over the resonant frequency band from 1.4 to 2 GHz turns from negative values (for the reference antenna) to positive values (for the proposed antenna). As shown in Fig. 7(b), the value of the imaginary part of the proposed antenna impedance varies between 0 and 300 Ω over the desired frequency band. This feature could help the proposed antenna to produce a better conjugate matching with the rectifier, since the imaginary part of the impedance of the rectifier normally varies between -700 and 0 Ω as we discussed earlier. The simulated 3D radiation patterns of the proposed antenna at the frequencies of interest are depicted in Fig. 8. The 2D polar plots of antenna patterns in *E-plane* and *H-plane* are shown as well. Here we have only showed the directivity (maximum gain) of the antenna (without taking the mismatch loss into account). From Fig. 8, it can be seen that the antenna has symmetrical patterns about YOZ plane with a maximum directivity of 1.8 dBi at 0.9 GHz, 3.5 dBi at 1.8 GHz and 3.3 dBi at 2.4 GHz. The antenna is more directive towards the long arm direction at 1.8 GHz and 2.4 GHz with the half-power beam-widths (HPBW) of around 174° and 185° respectively. The HPBW is about 96° at 0.9 GHz.

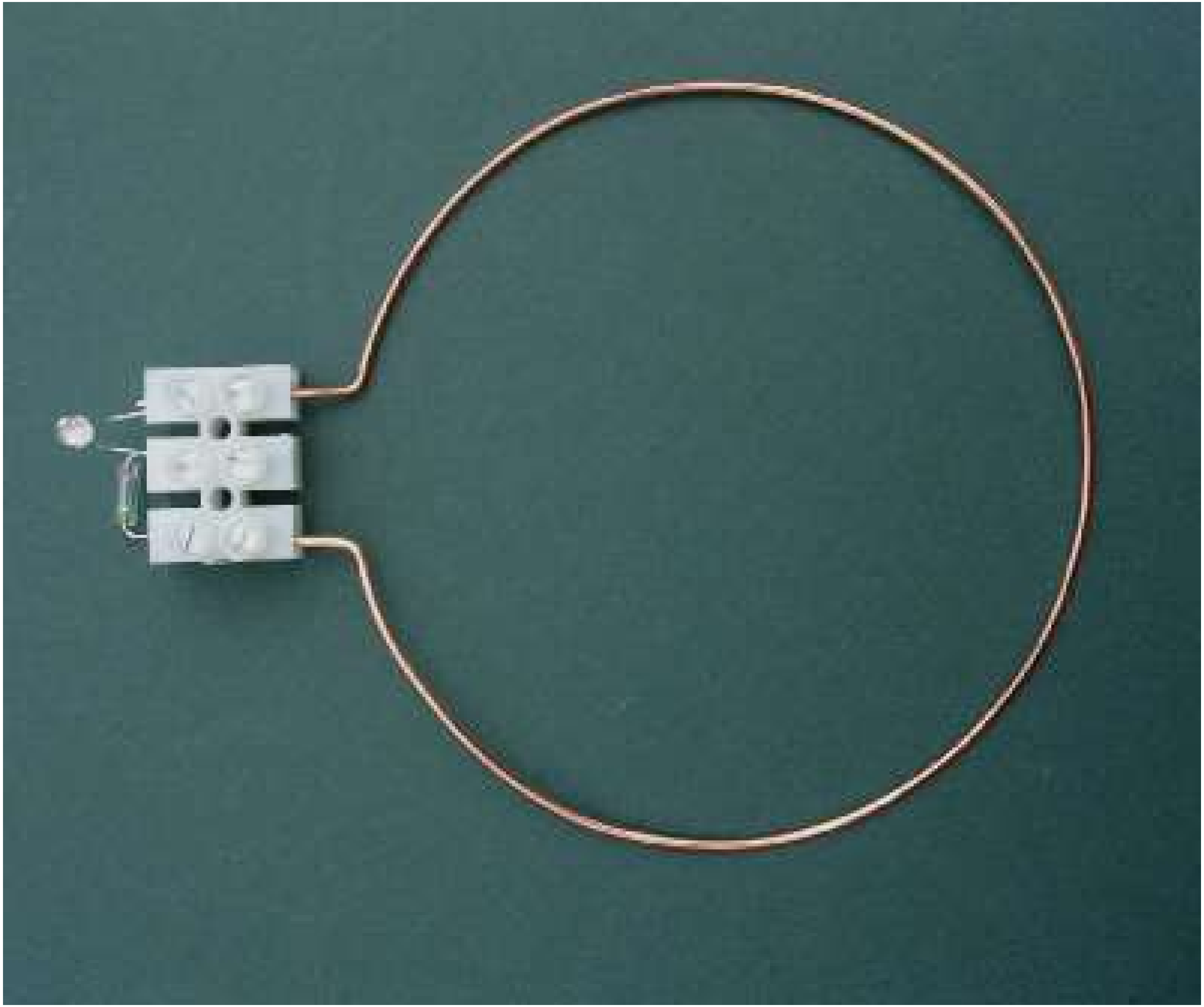
Therefore, the proposed broadband OCFD antenna has obtained high impedance over a wide frequency range. The proposed design is just an example to illustrate the proposed new method. The details of the dipole could be modified according to the frequency of interest.

IV. RECTENNA INTEGRATION

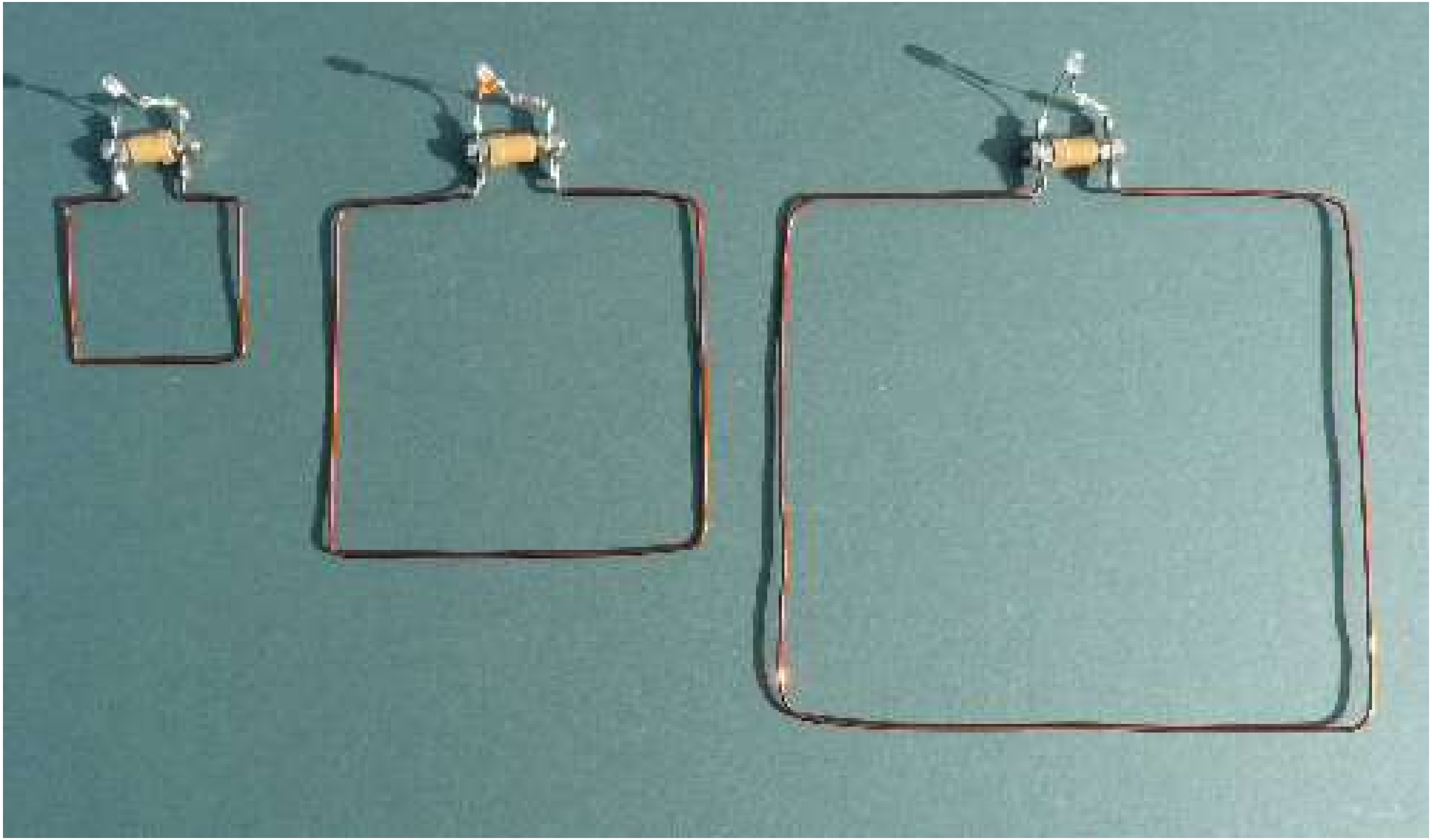
A. Rectifier Configuration

The proposed high impedance OCFD antenna may directly conjugate match with the input impedance of a rectifier over a wide frequency band. The rectifier should only consist of few circuit components for rectification, DC storage and output. A single shunt diode rectifier is selected due to its very simple structure and high conversion efficiency [33]. The configuration of the single shunt diode rectifier with a dipole

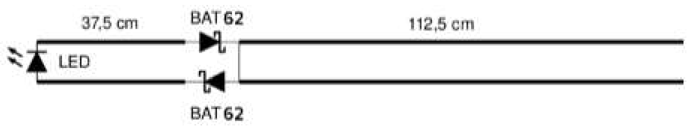





Sony Ericsson



ake and it can be sent in an envelope. I made tens of them and sent them to politicians, newspapers, universities... I gave some to local people, together with a user
i later version, that can be rolled up in an envelope that fits the conditions to be sent with only one stamp.

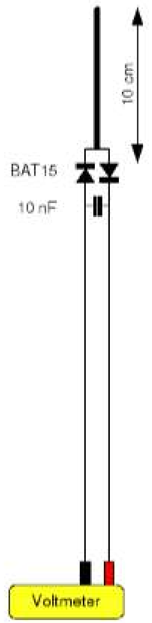


BAT62 detection diodes are no more produced. **BAT15** diodes work fine but they wear out; after a few months they stop functioning. **SMS7630** diodes are great but very little and mechanically fragile. **MMSD701T1G** diodes are sturdy and powerful; an excellent choice for a beginner. Such SMD diodes do also work for cell phone frequencies, which allows to test out a snake with a calling cell phone pushed against it. But any detection diodes that can manage 100 MHz will do.

The LED I'm currently using is the **L-7113SEC-H** . It lights up with a low tension and a very low current (the bluer a LED, the more tension it needs). Its color is red yet close to orange hence it is easily seen by the human eye (the eye is most sensitive to green, yellow and orange). The beam is quite narrow so when the LED is directed towards somebody's eyes it will appear quite bright.

For the lengths of 37.5 and 112.5 centimeters, any electric wire with two copper conductors will do. Audio signal wire is a practical solution. Use the shielding as one of the two conductors. The lengths of the two segments must not be precise. What matters is that the total length of the snake be 1.5 meters. Do not hesitate to try out if a little longer or shorter snake gives better results.

A schematic of my current probes, that I connect to a standard multimeter, measuring Volts DC. The measure displayed by the multimeter must be multiplied by 10. When using a 200.0 mV scale, just read while forgetting the dot:



Lead Free Status	Lead Free
RoHS Status	RoHS Compliant

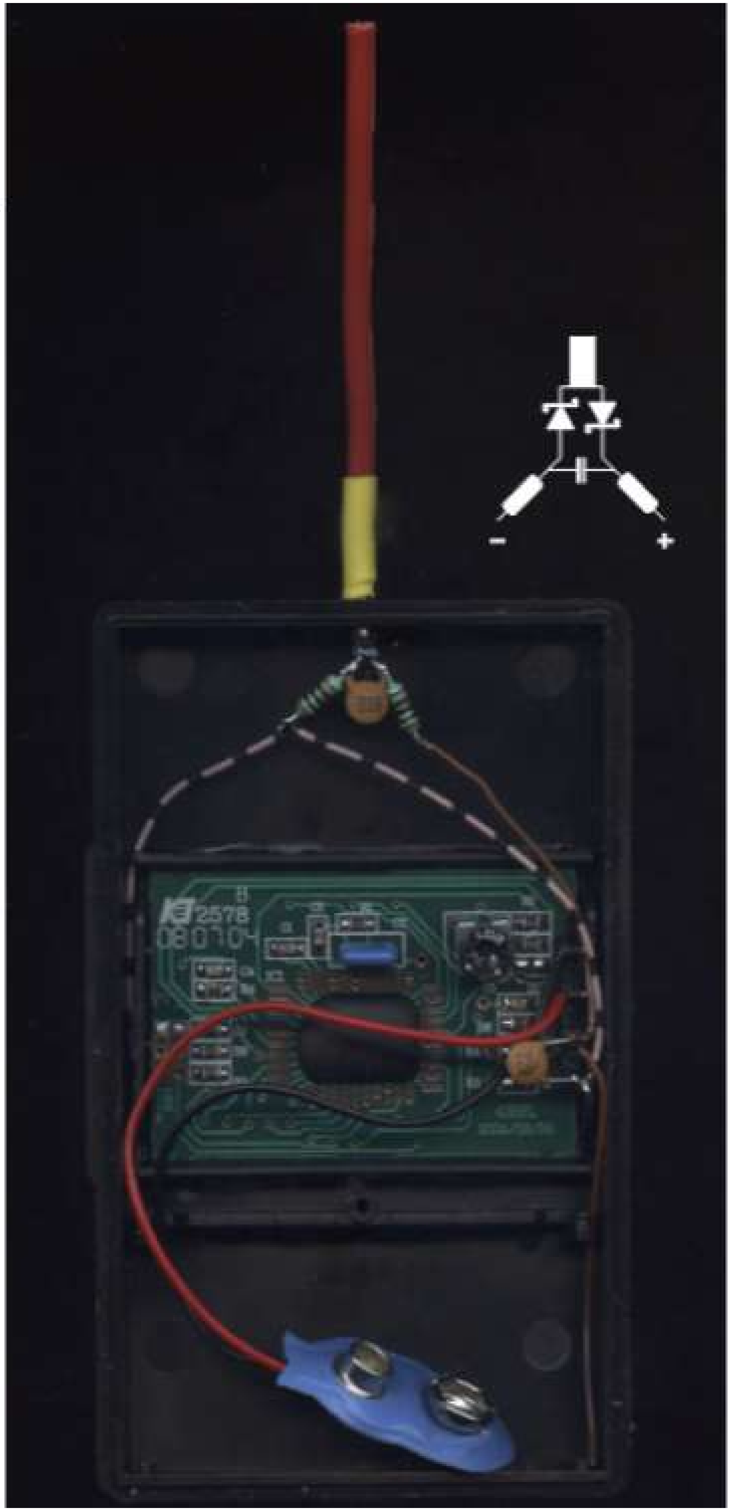
Features, Applications

The MMSD301T1, and MMSD701T1 devices are spin-offs of our popular MMBD301LT1, and MMBD701LT1 SOT-23 devices. They are designed for high-efficiency UHF and VHF detector applications. Readily available to many other fast switching RF and digital applications.

Extremely Low Minority Carrier Lifetime Very Low Capacitance Low Reverse Leakage AEC Qualified and PPAP Capable S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant*

XXX G = Specific Device Code SMMSD701T1G = Date Code = Pb-Free Package
Rating Reverse Voltage MMSD701T1G, SMMSD701T1G Forward Current (DC) Continous Forward Power Dissipation = 25C Junction Temperature Storage Temperature Range Symbol VR Value to +150 Unit Vdc M G

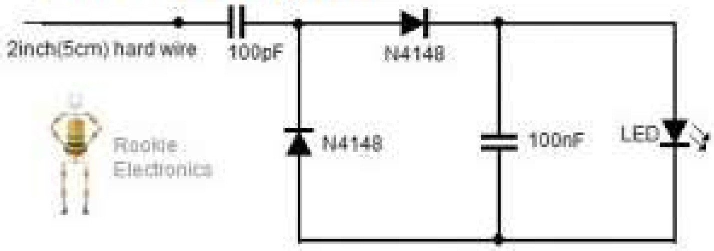

152


-
+

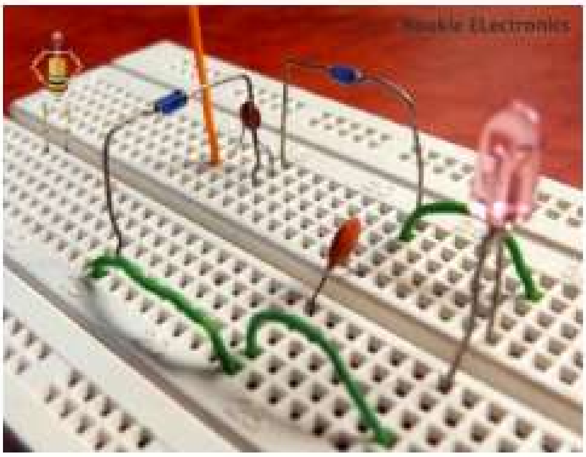
Parts Required:

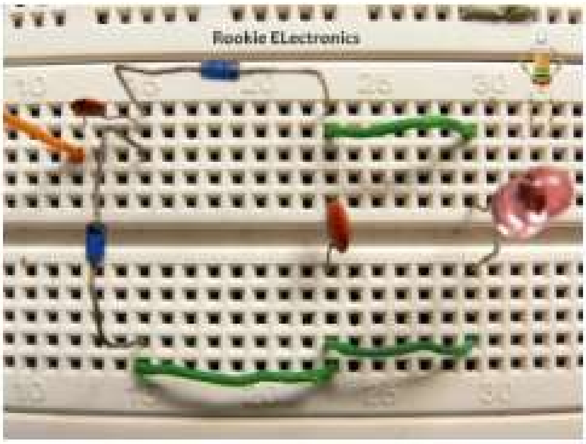
1. 100nF & 100pF
2. n4148 Diode x(2)
3. A bright good quality LED

Circuit Diagram:

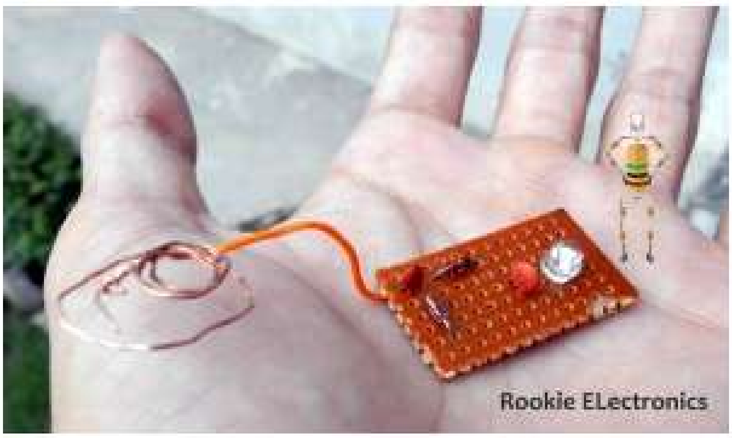


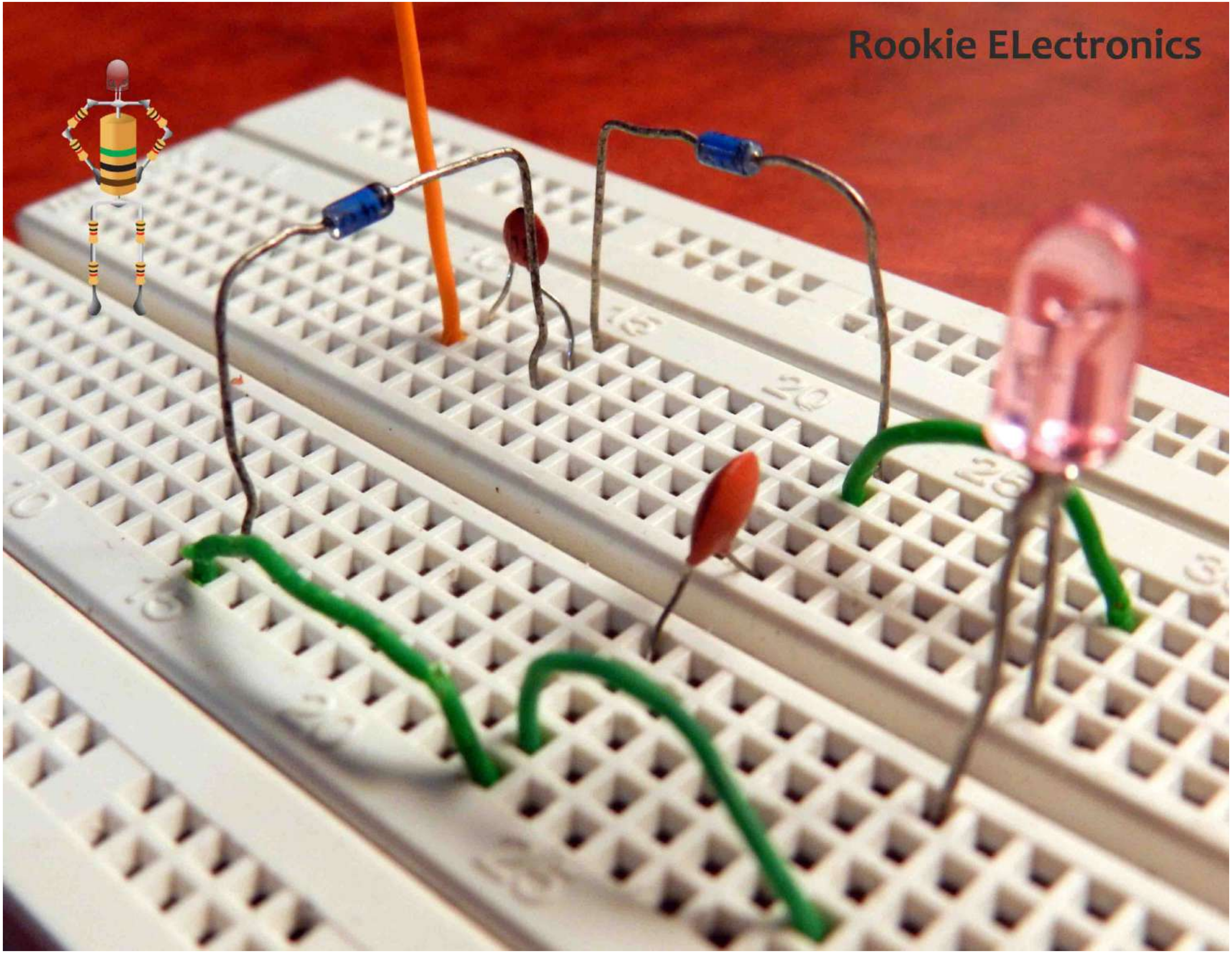
Bread board Arrangement:

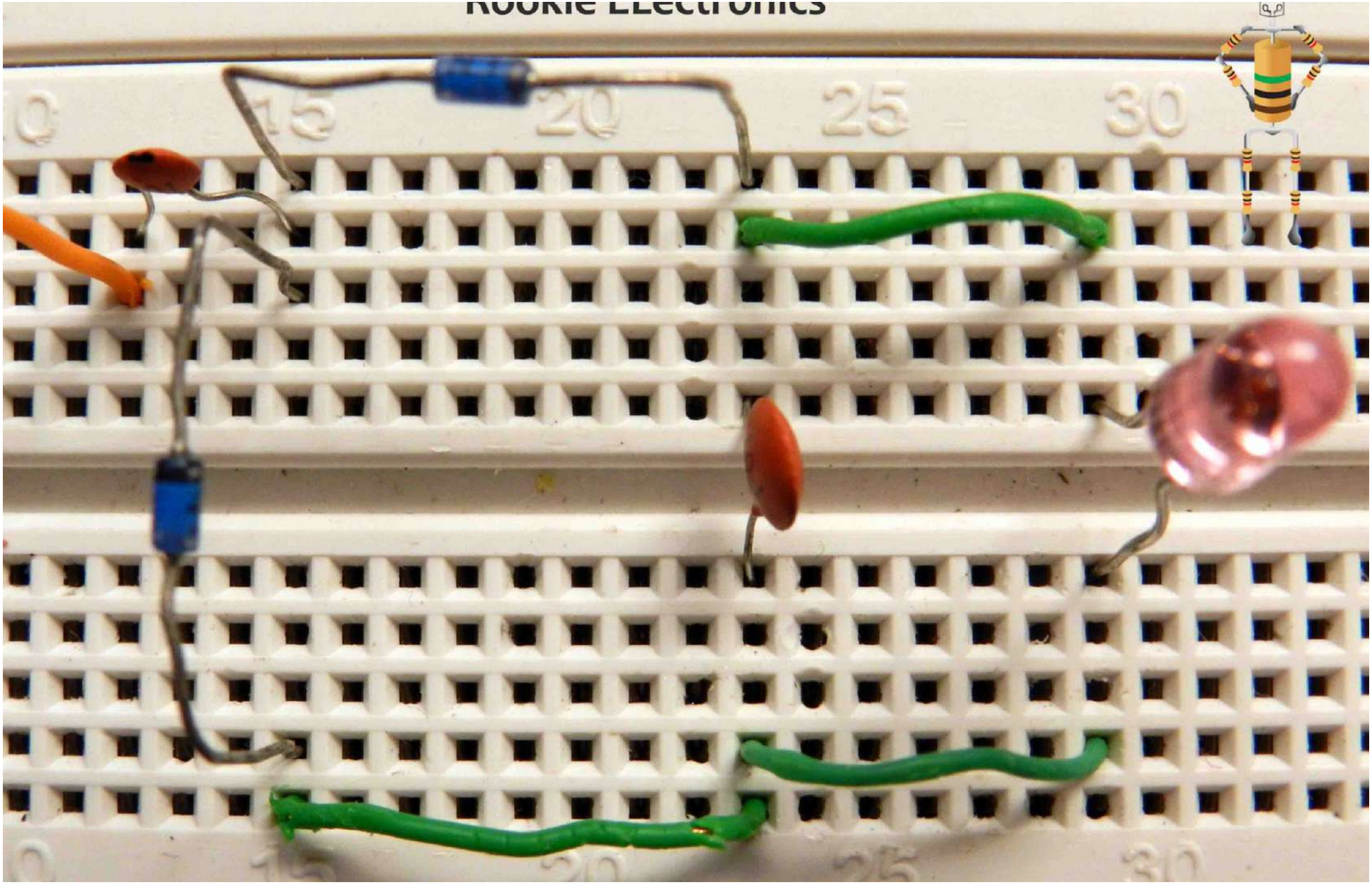




Strip Board:




Rookie ELectronics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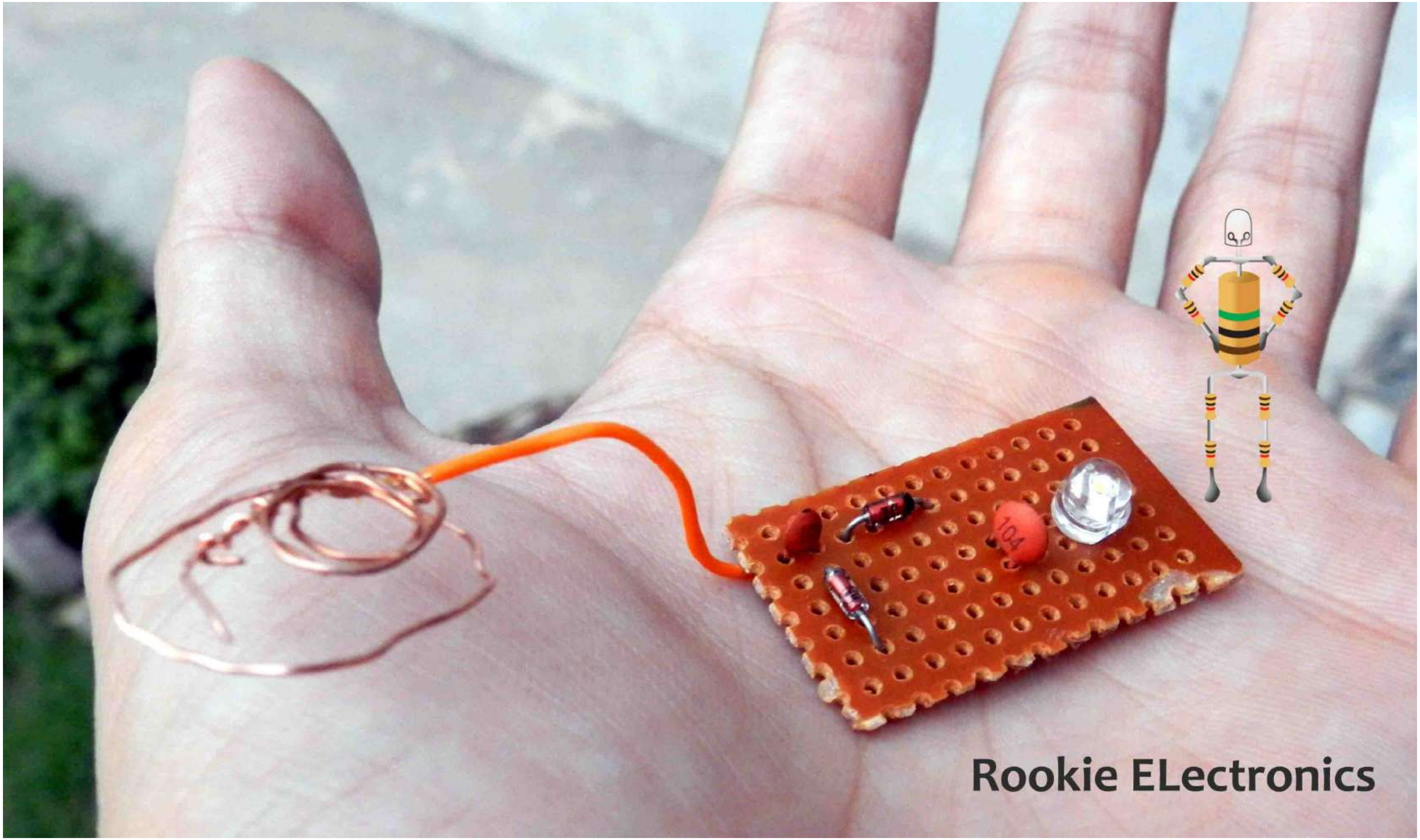
20
25
30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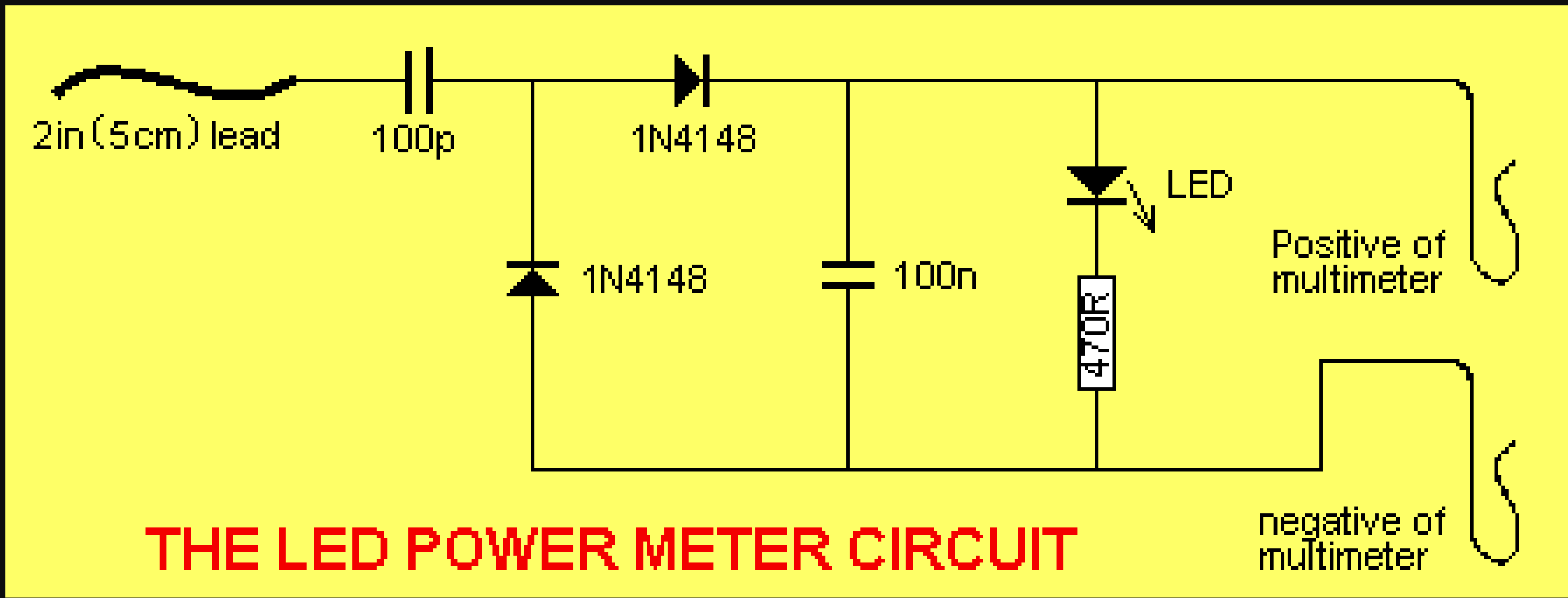
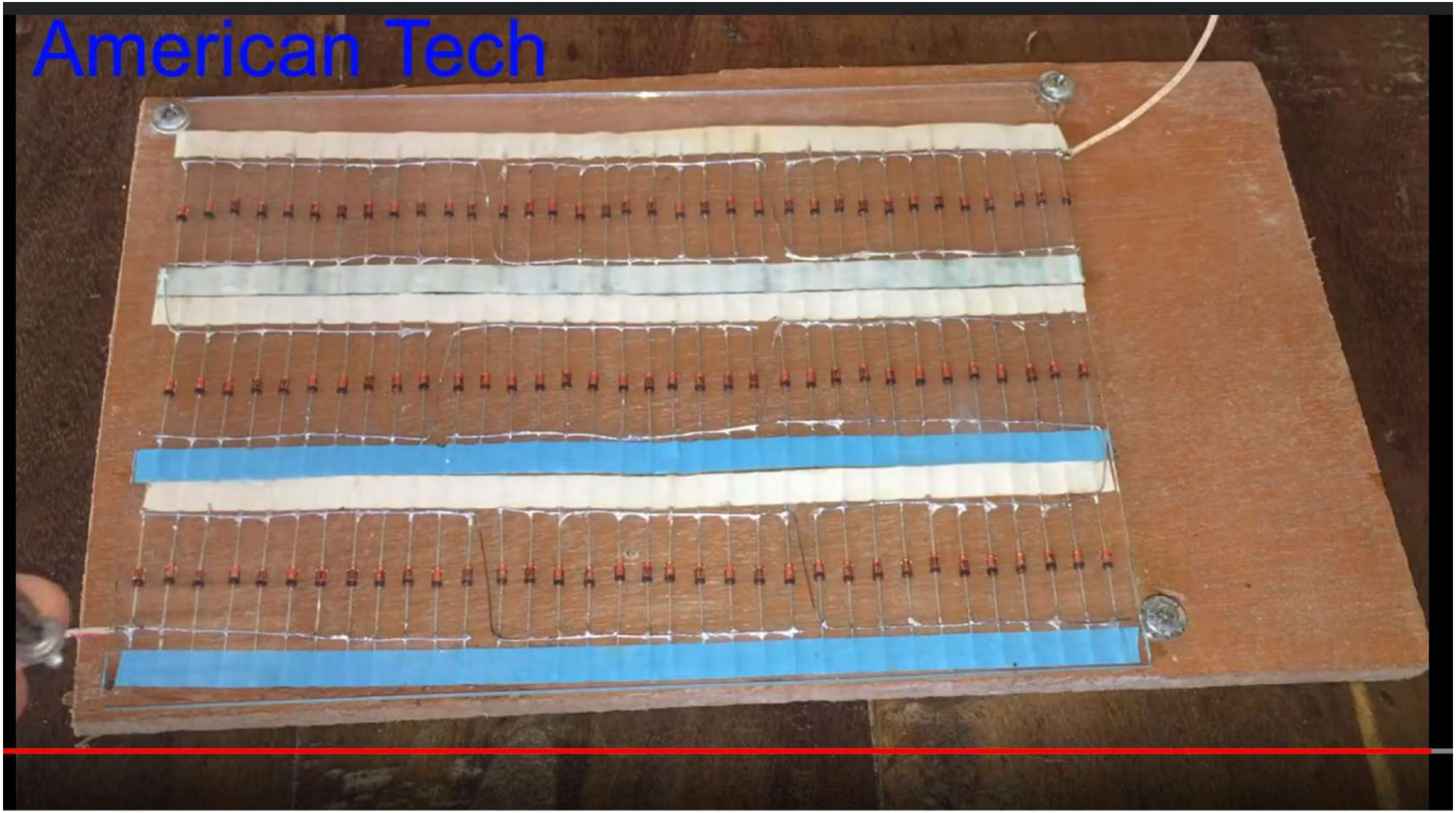
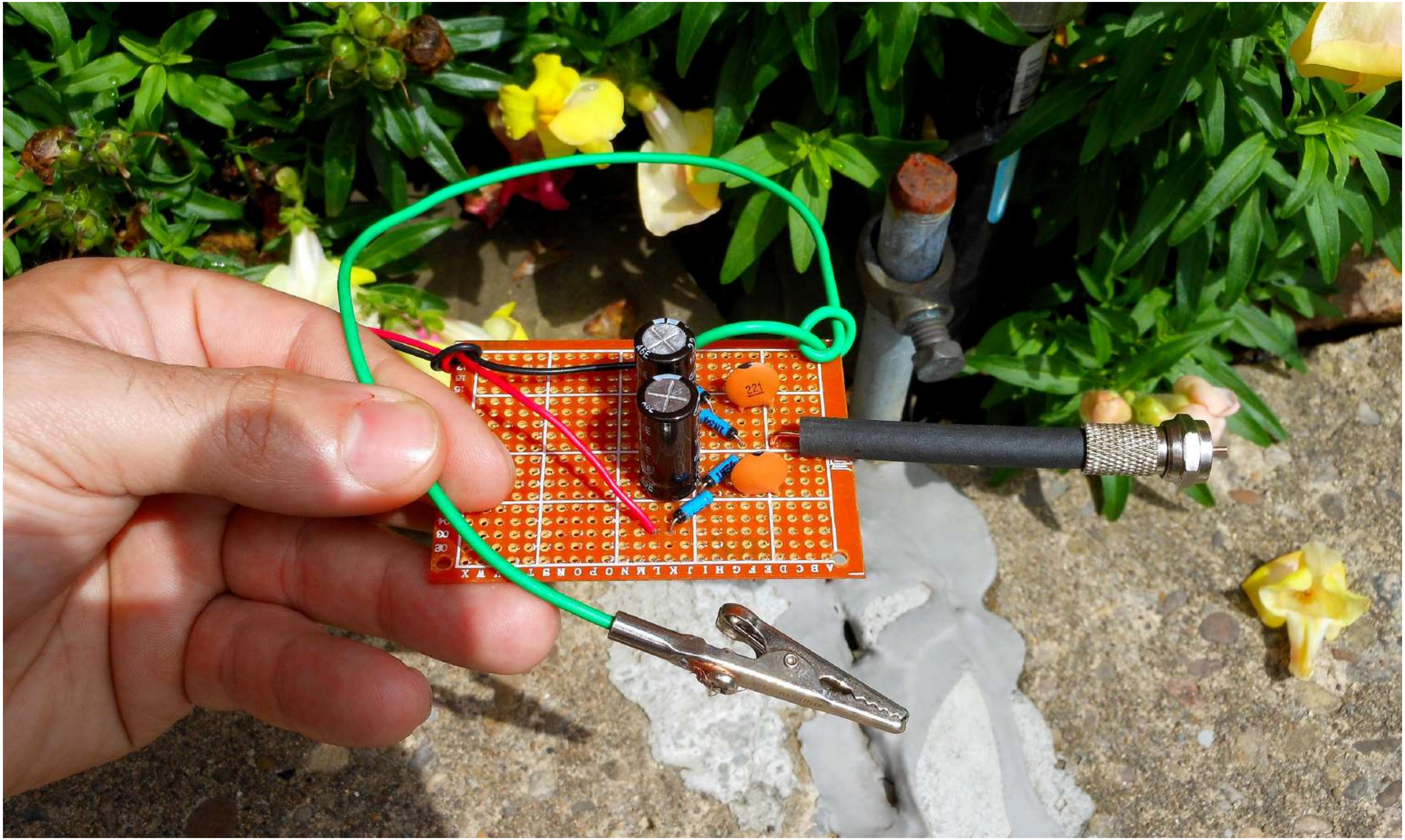
Rookie ELectronics


2in (5cm) lead
100p
1N4148
1N4148
100n
LED
470R
Positive of multimeter
negative of multimeter
THE LED POWER METER CIRCUIT


American Tech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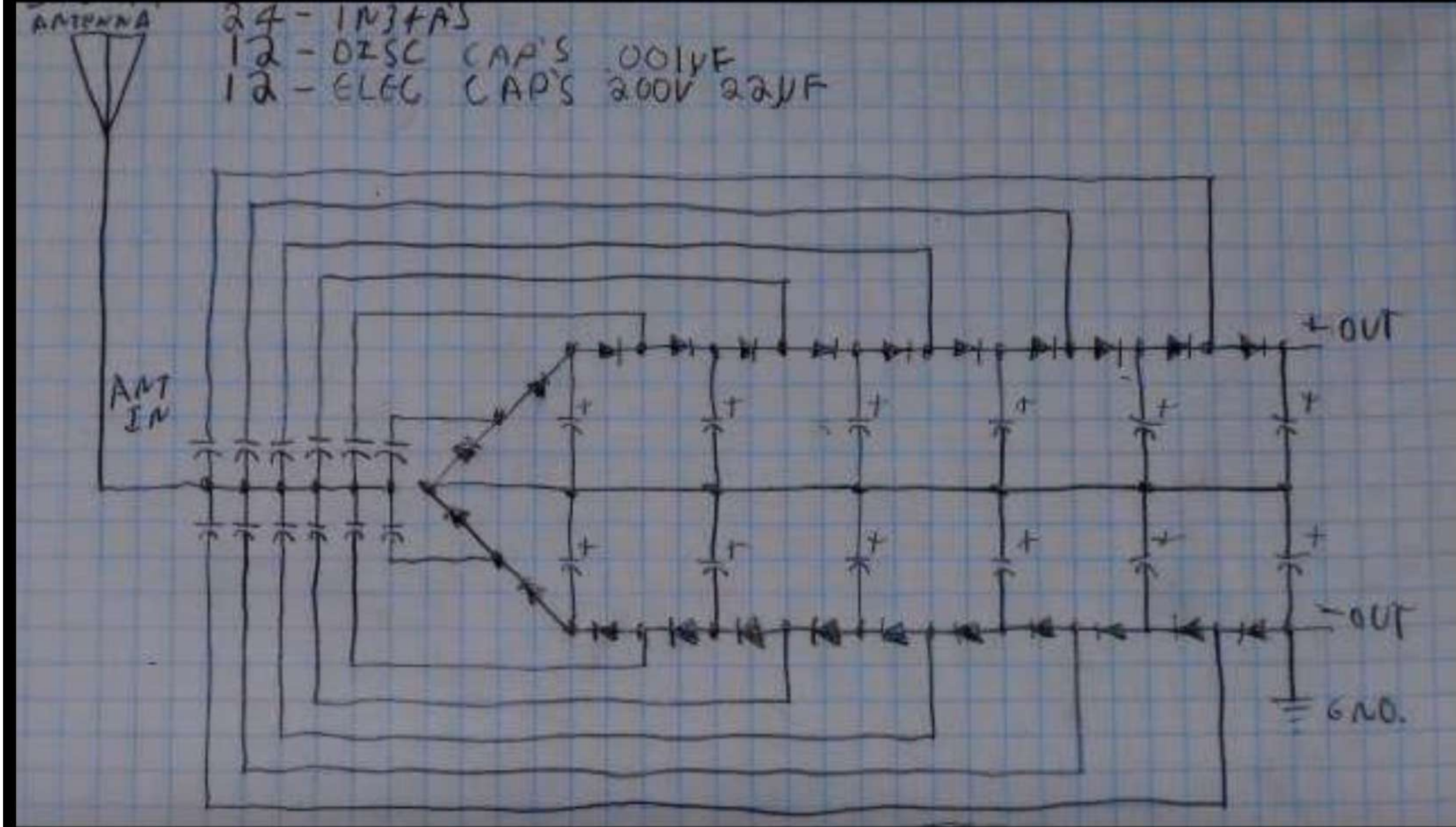
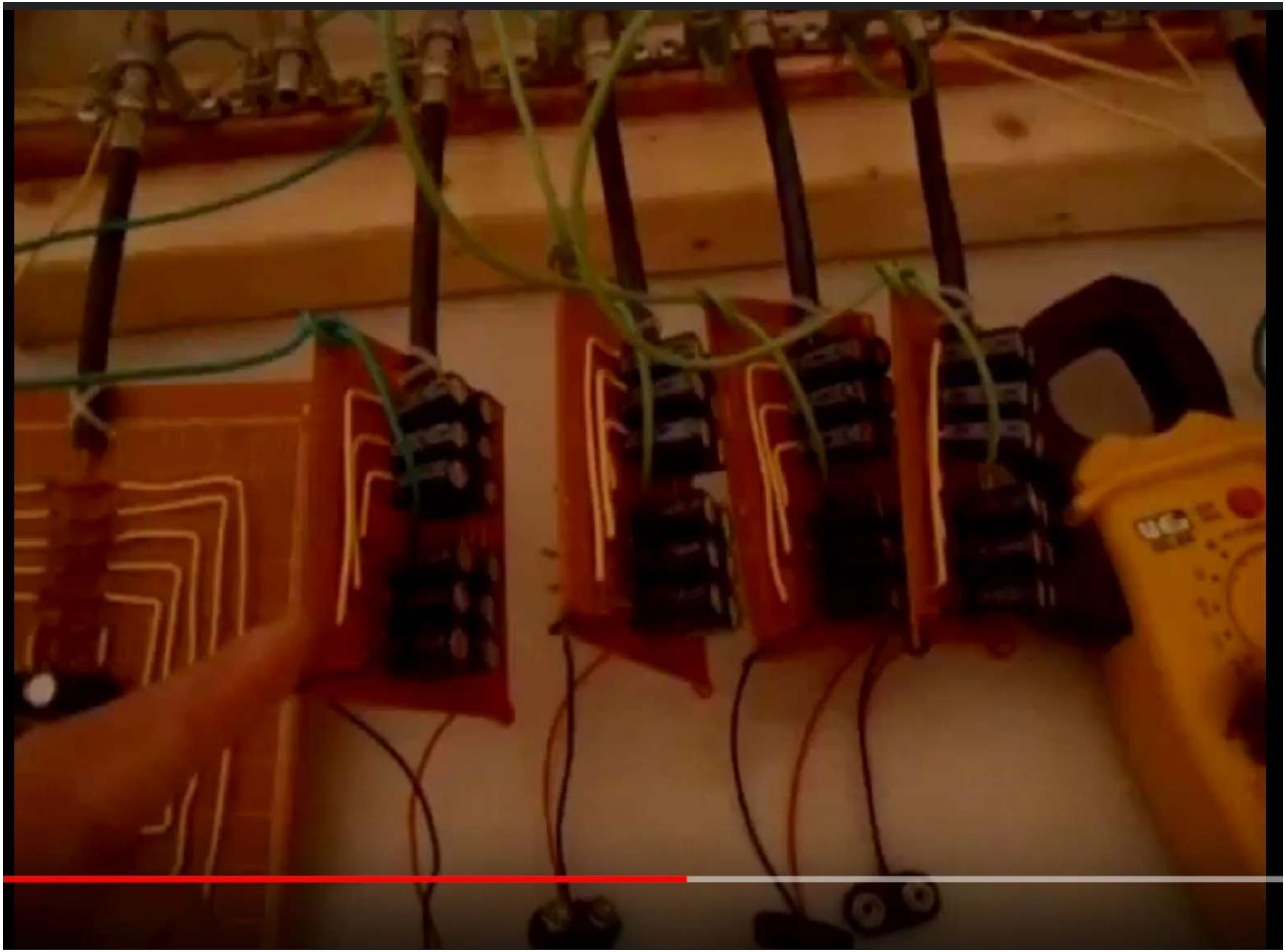
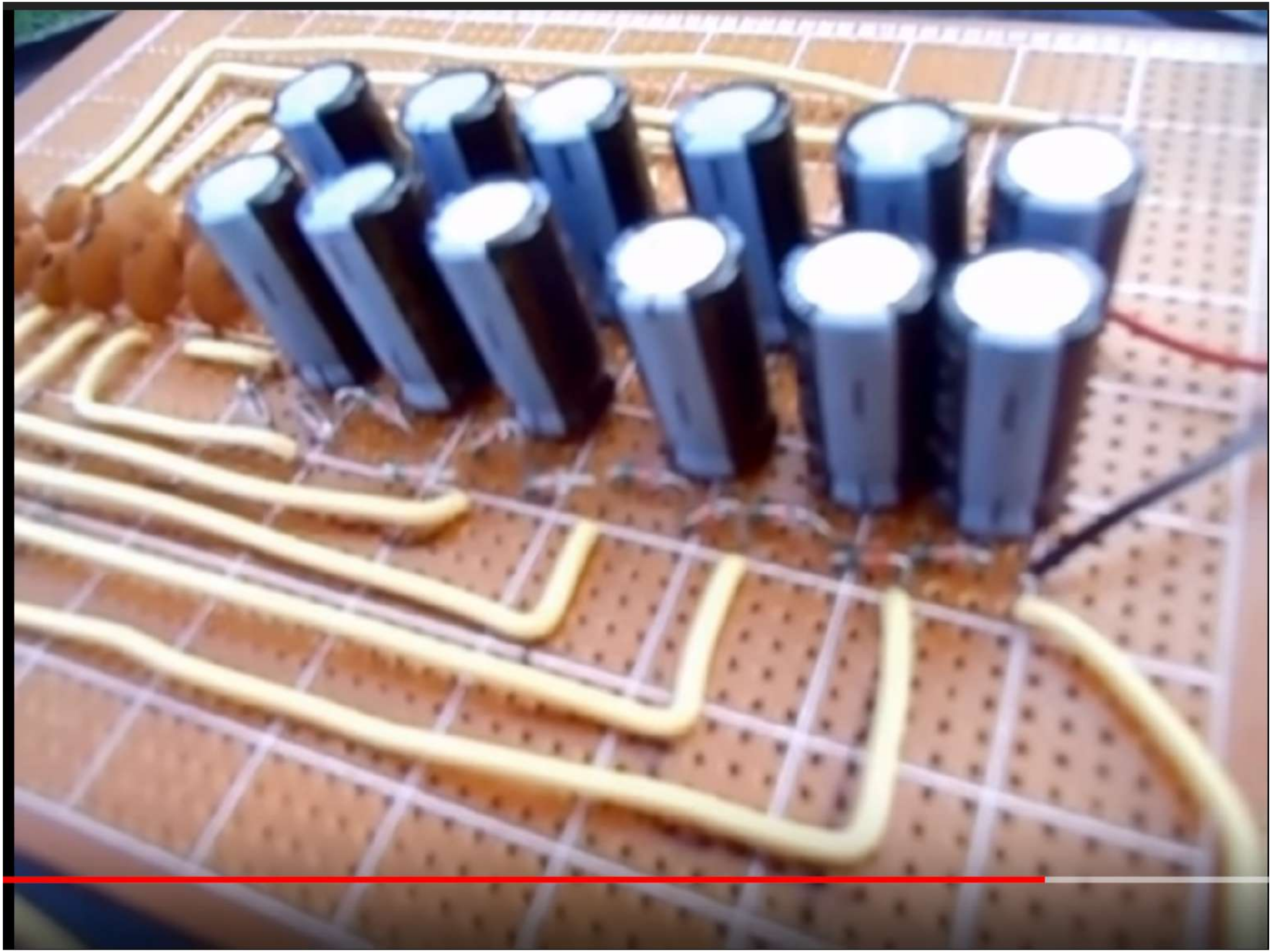
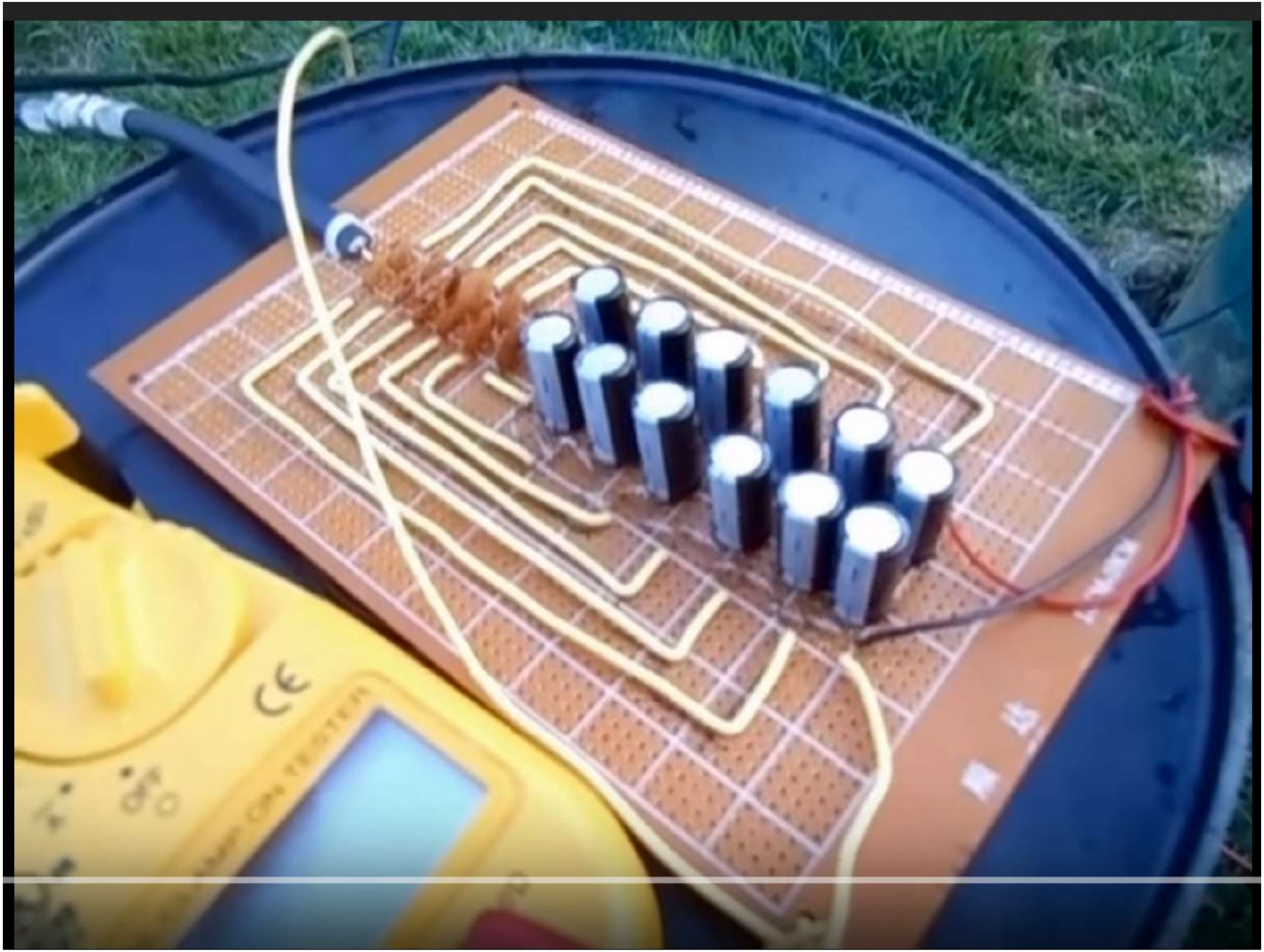
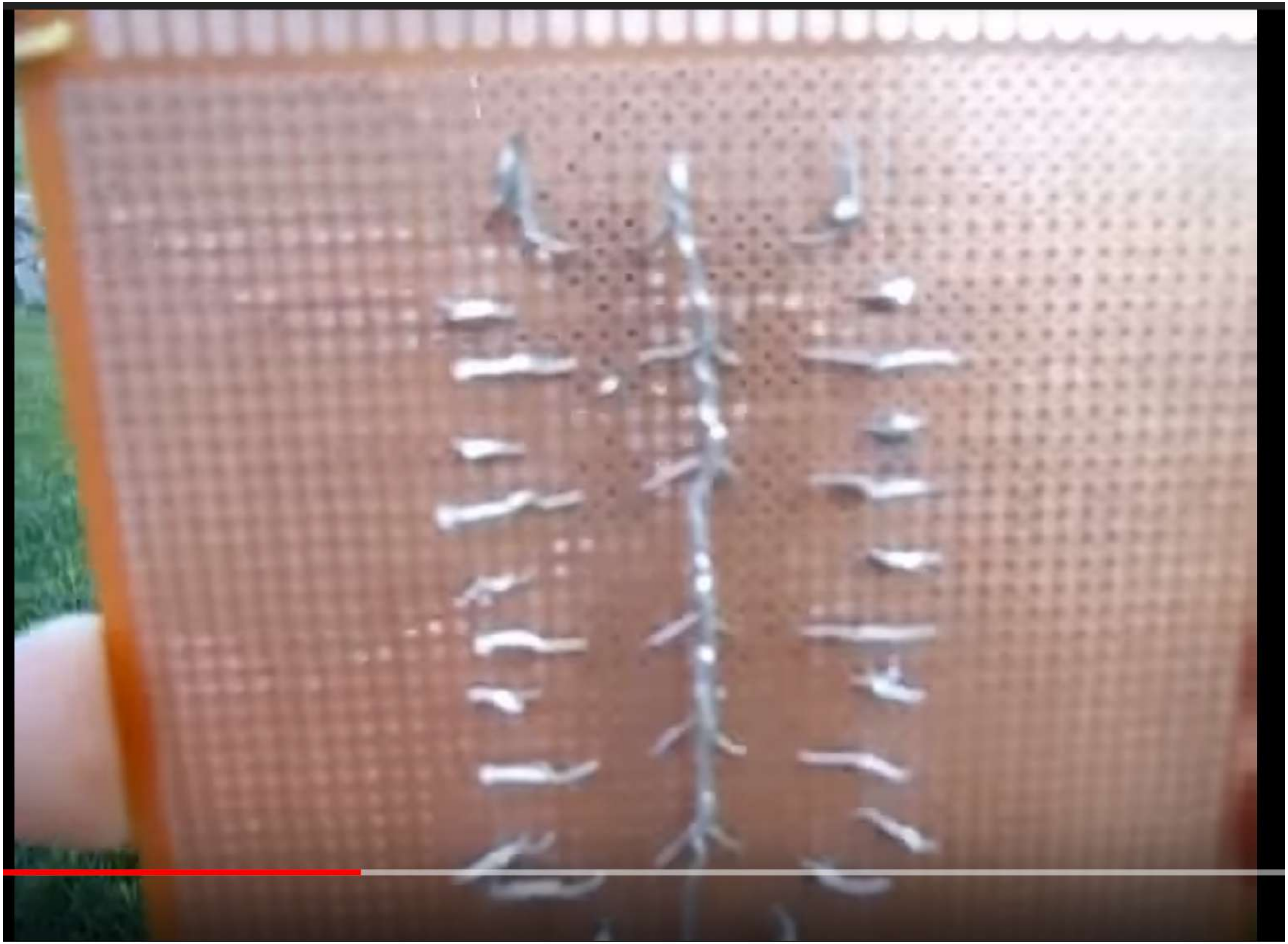
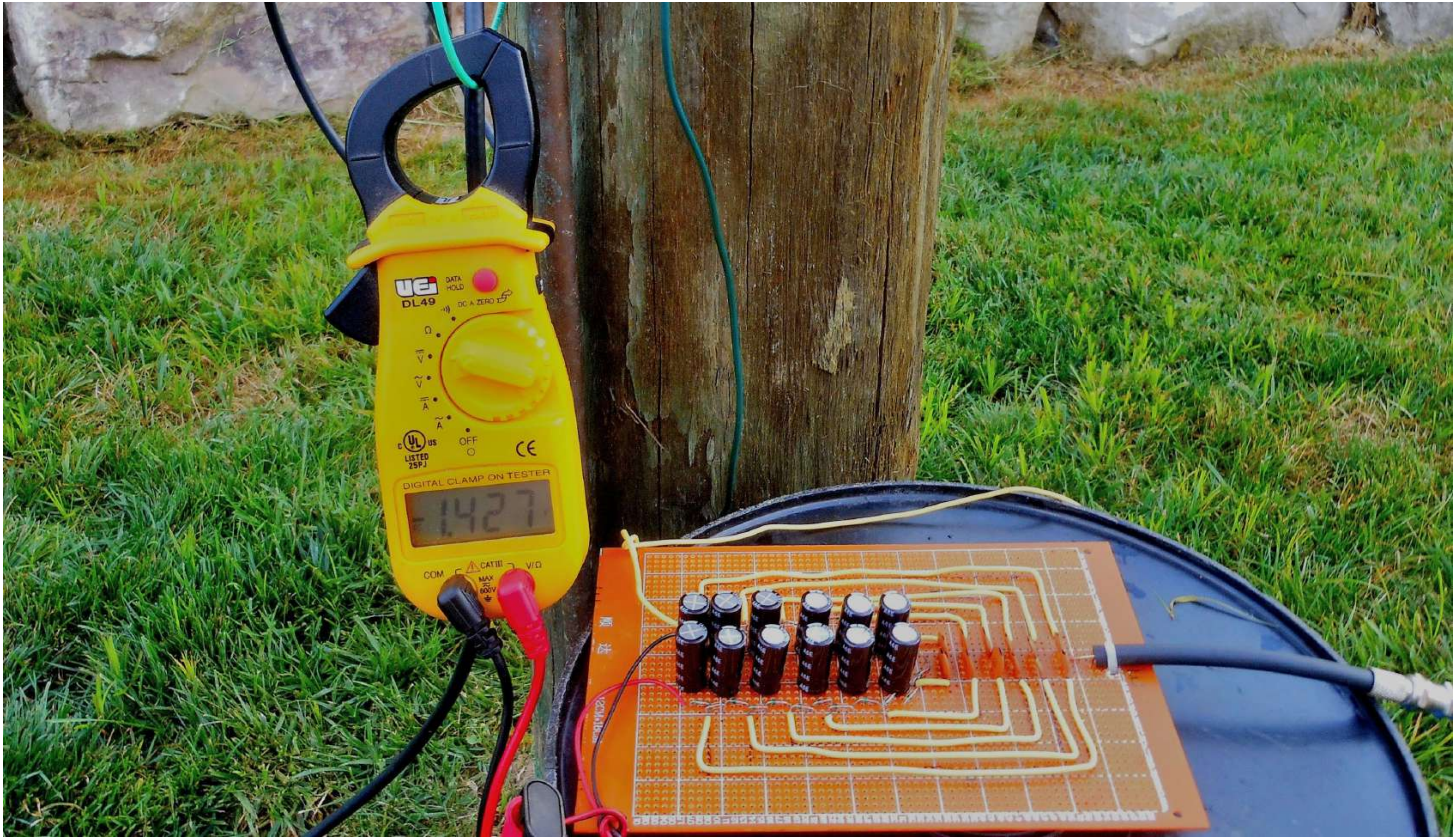

ANTENNA
24 - 1N34A'S
12 - DISC CAP'S .001μF
12 - ELEC CAP'S 200V 22μF
ANT IN
+OUT
-OUT
GND.

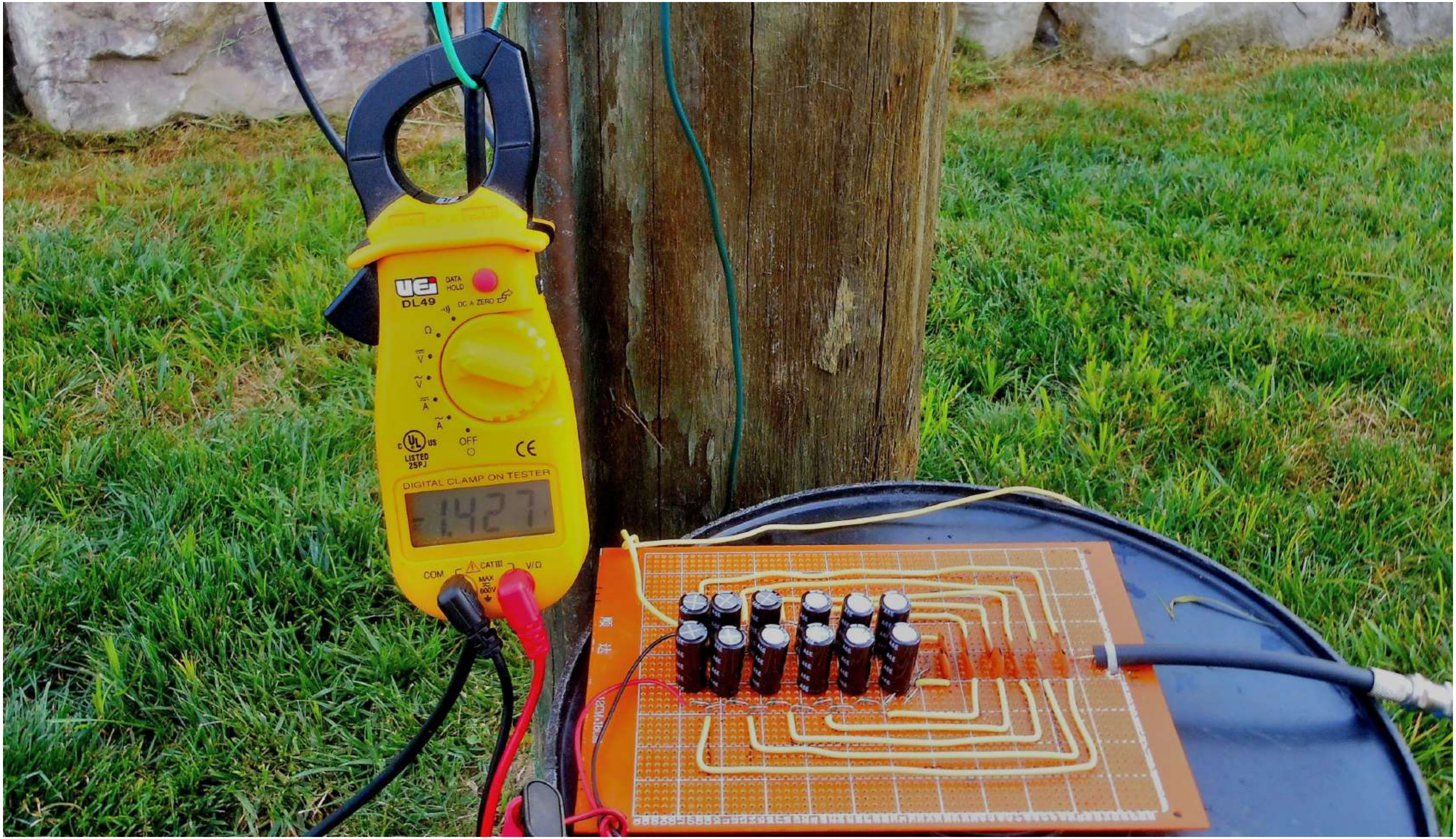









UEi
DL49
DATA
HOLD
DC A ZERO
OFF
LISTED
25PJ
CE
DIGITAL CLAMP ON TESTER
-1.427
COM
CAT III
MAX
600V
V/Ω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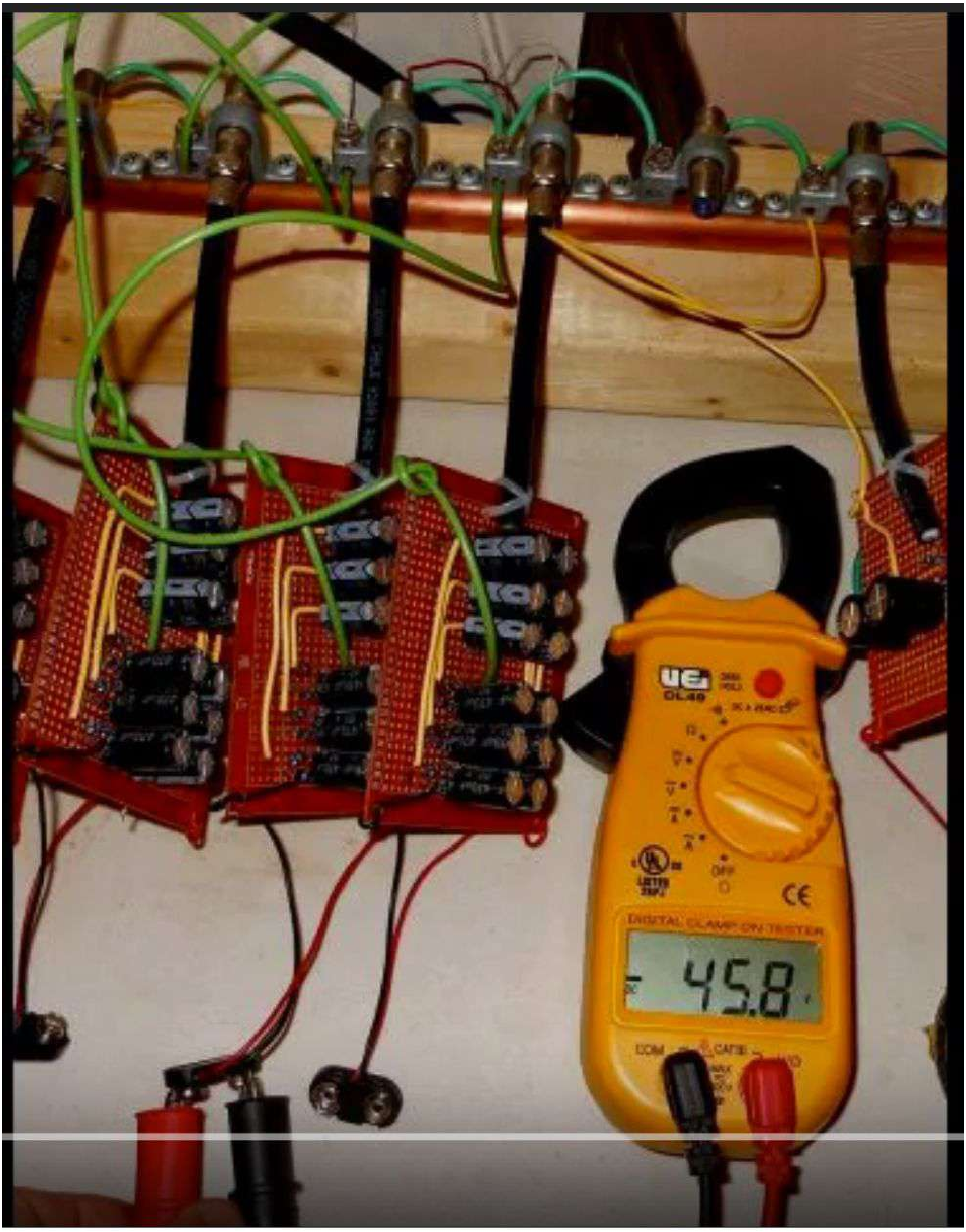
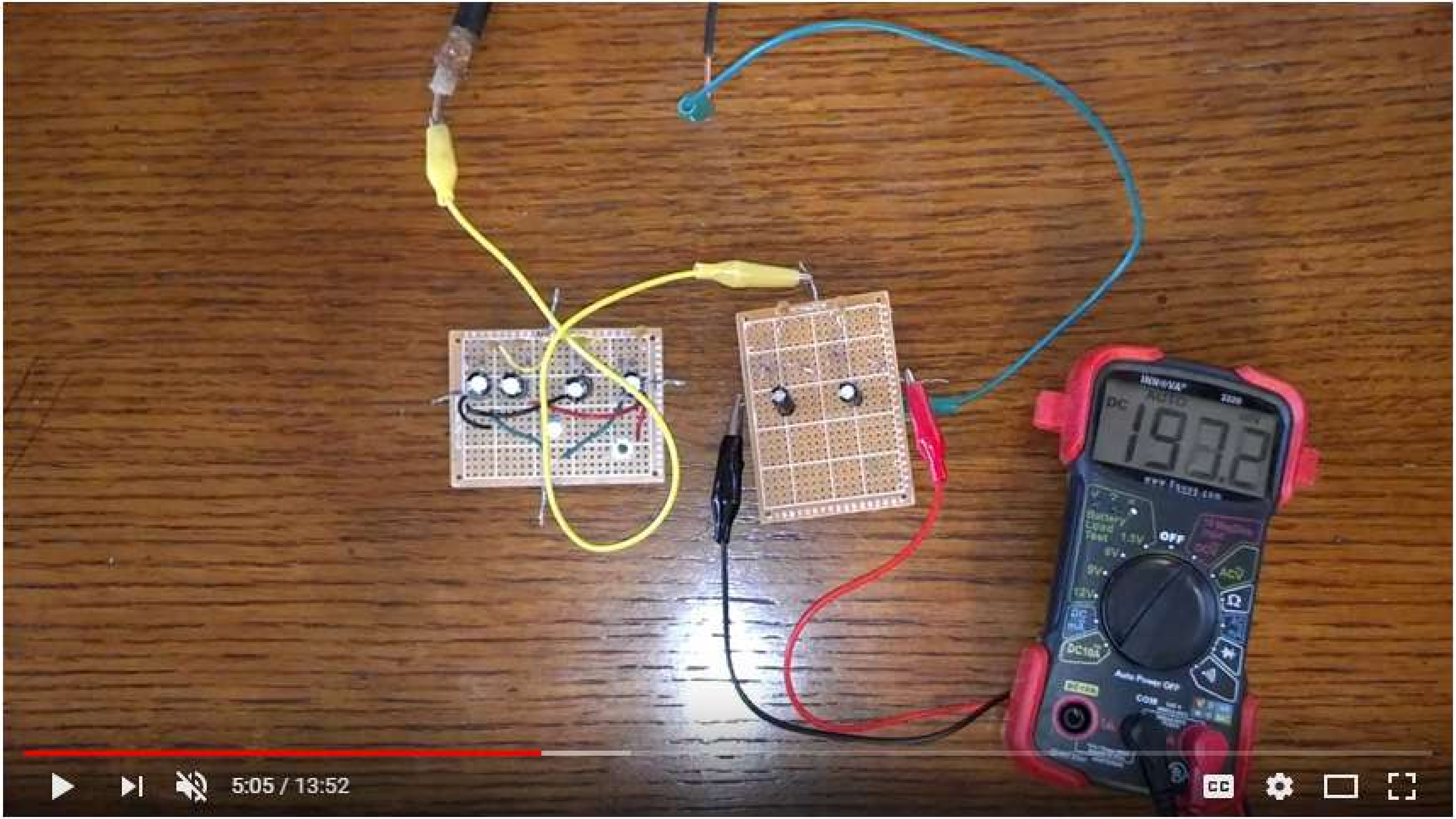
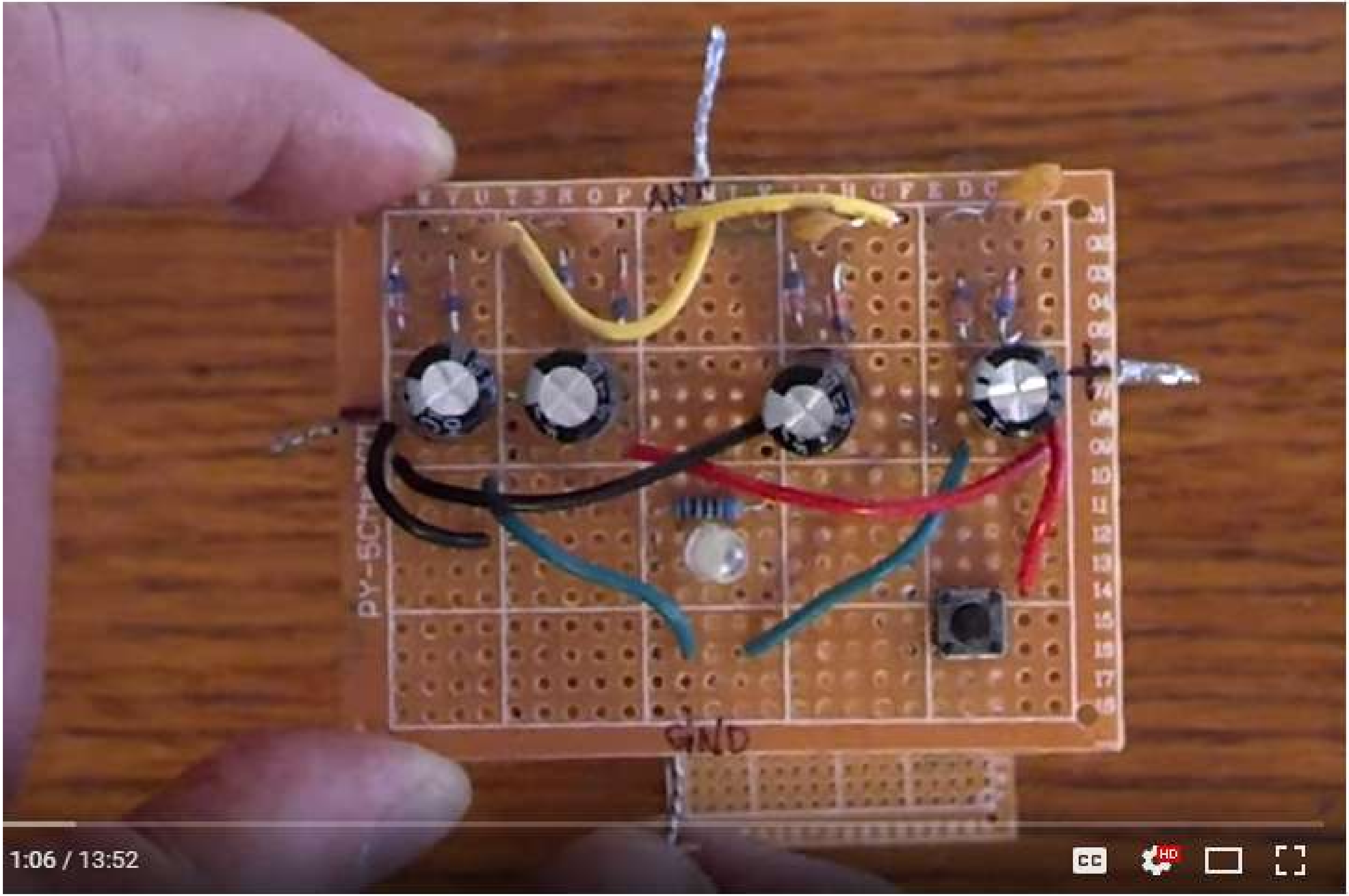
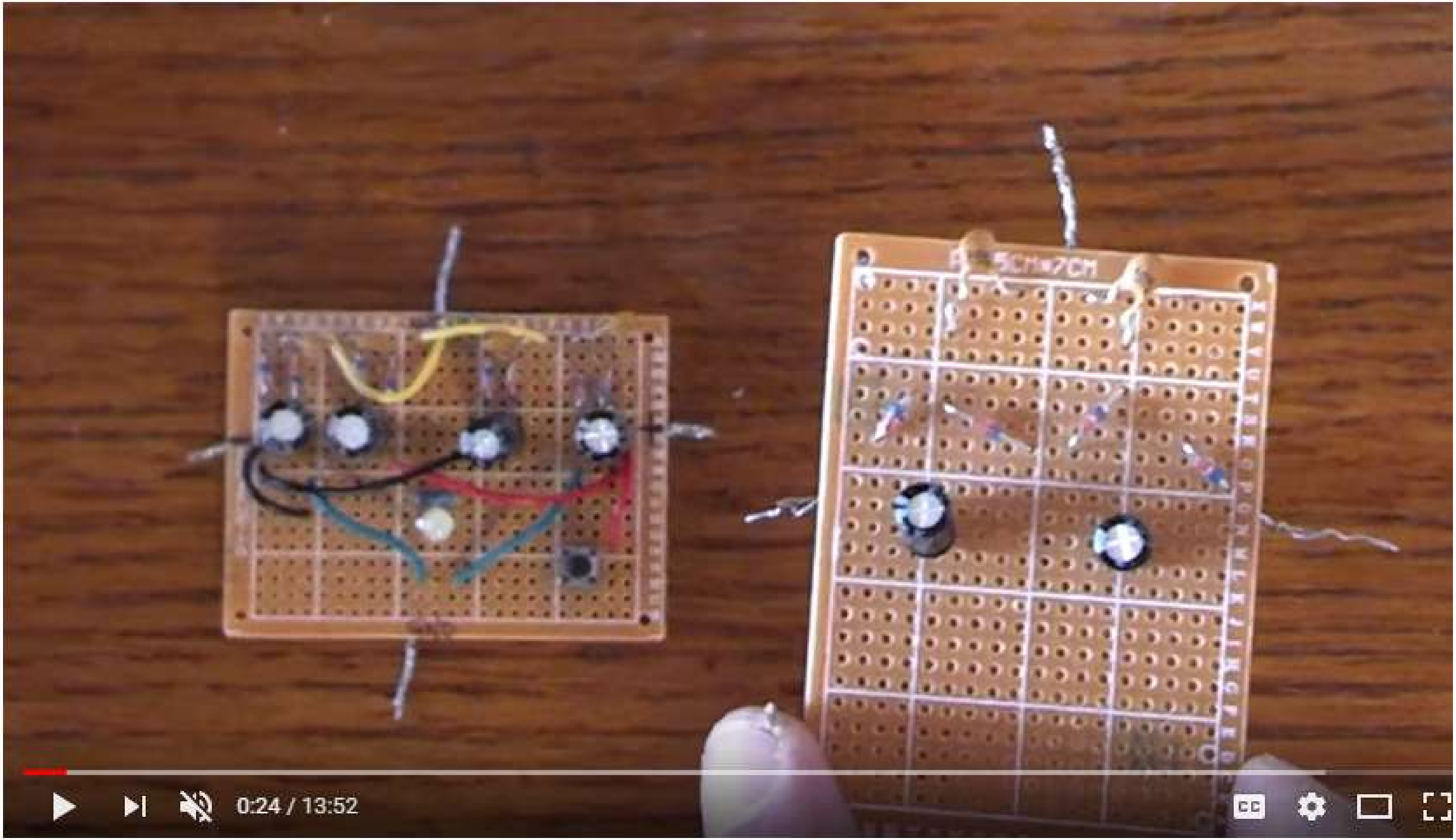
CAT III
MAX
600V
V/Ω


DIGITAL CLAMP ON TESTER
45.8
OFF
COM



Tesla Free Energy Air Circuit


ANT
GND
1:06 / 13:52
HD



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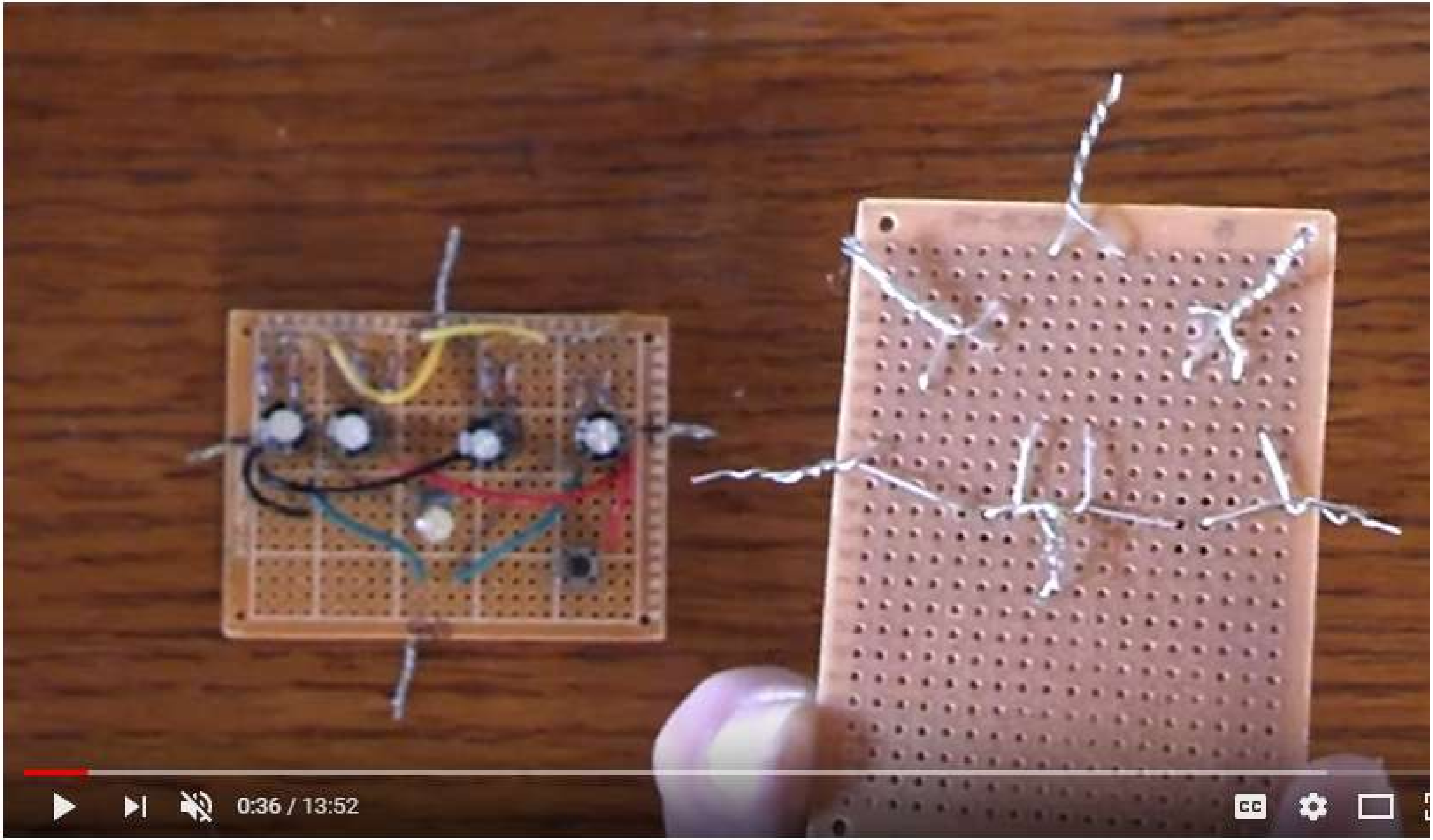
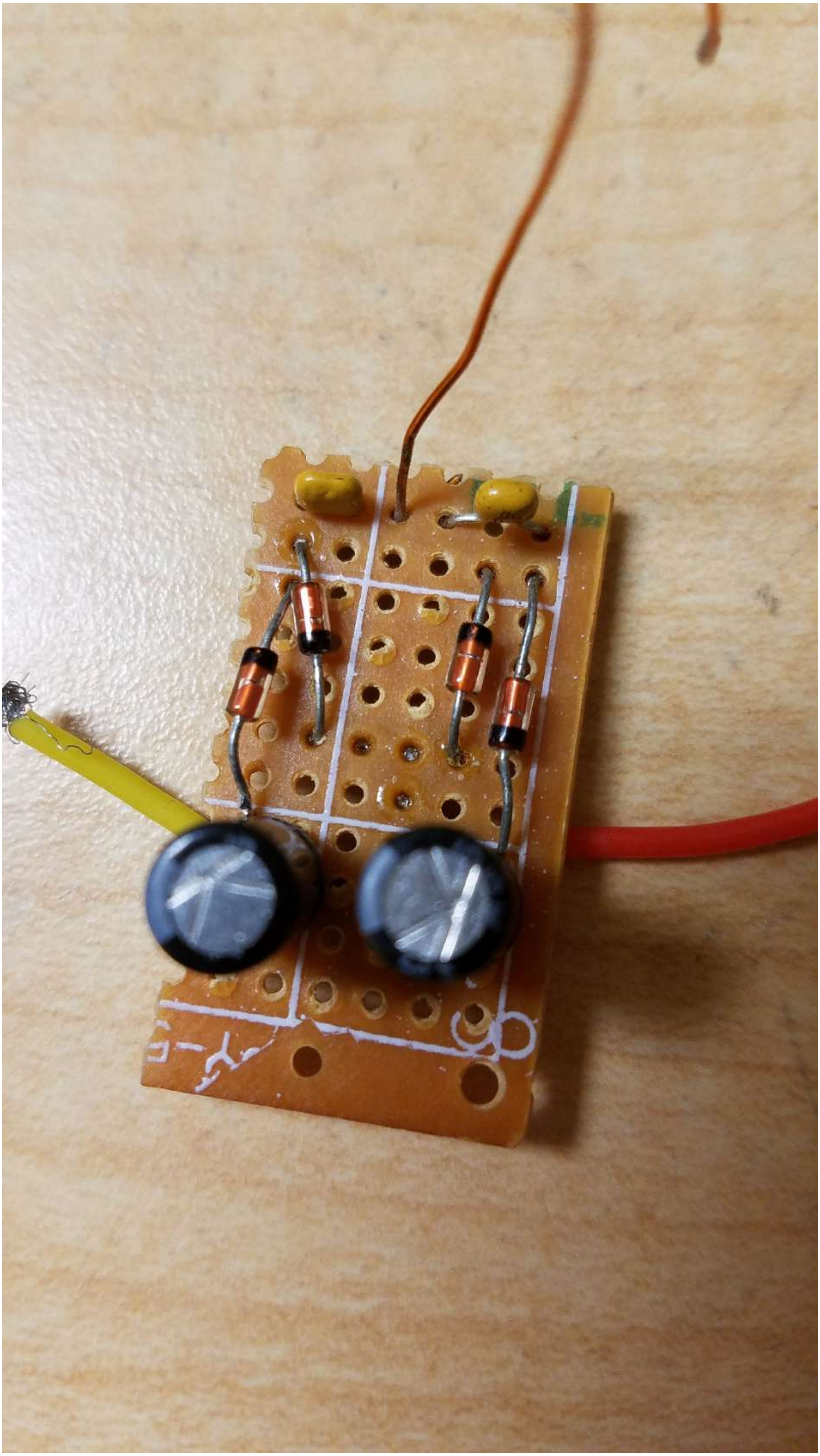
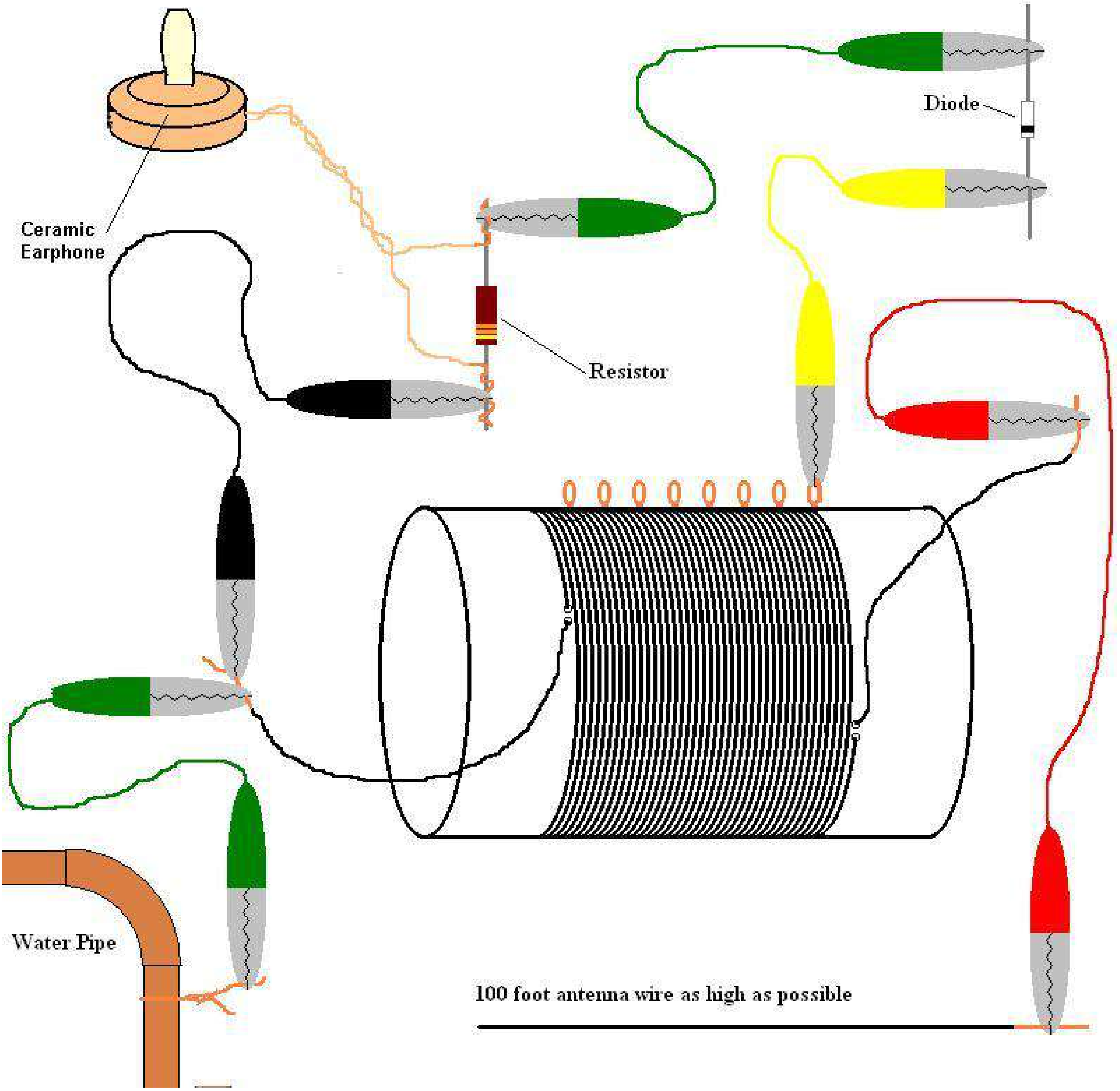
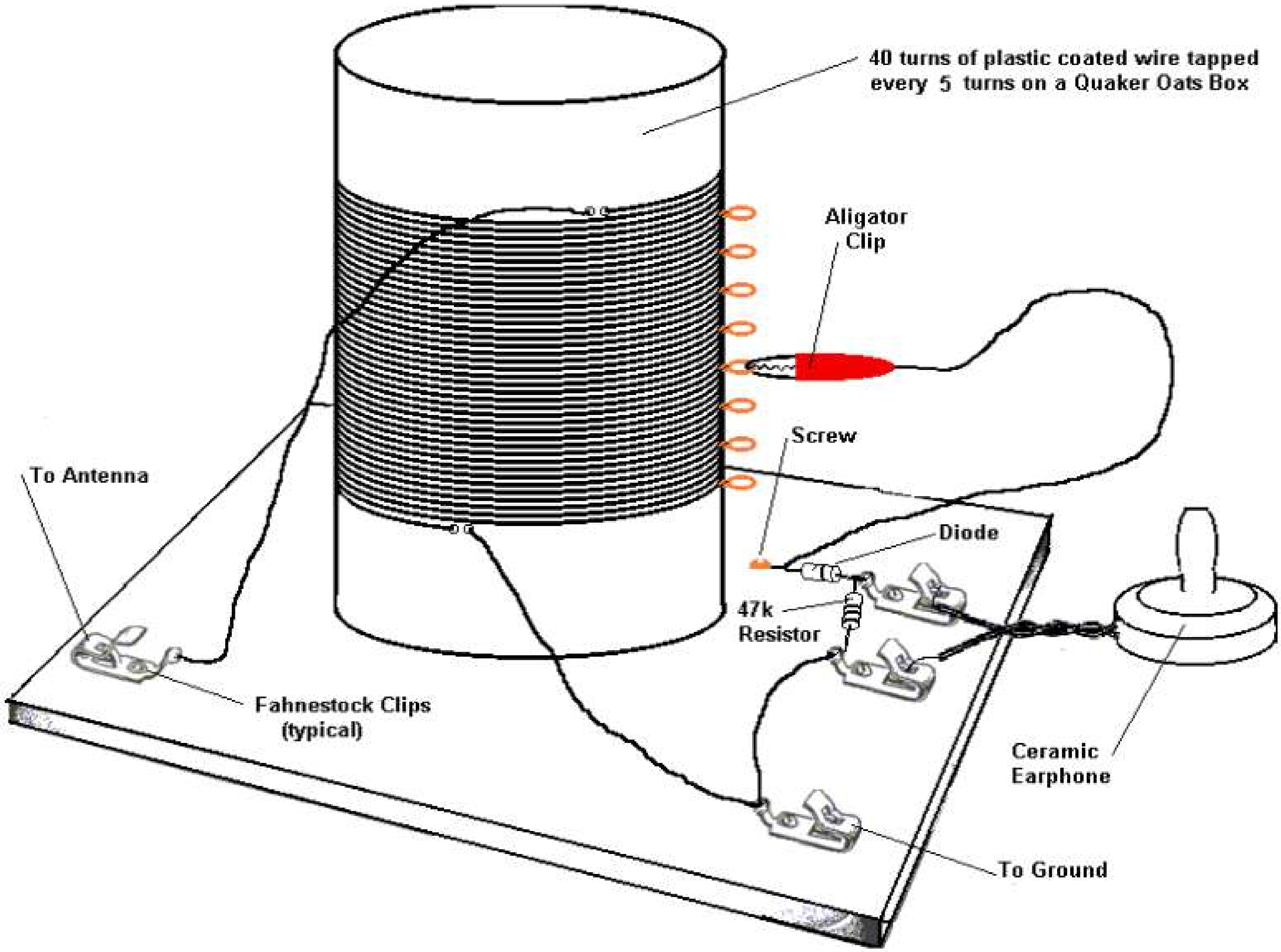


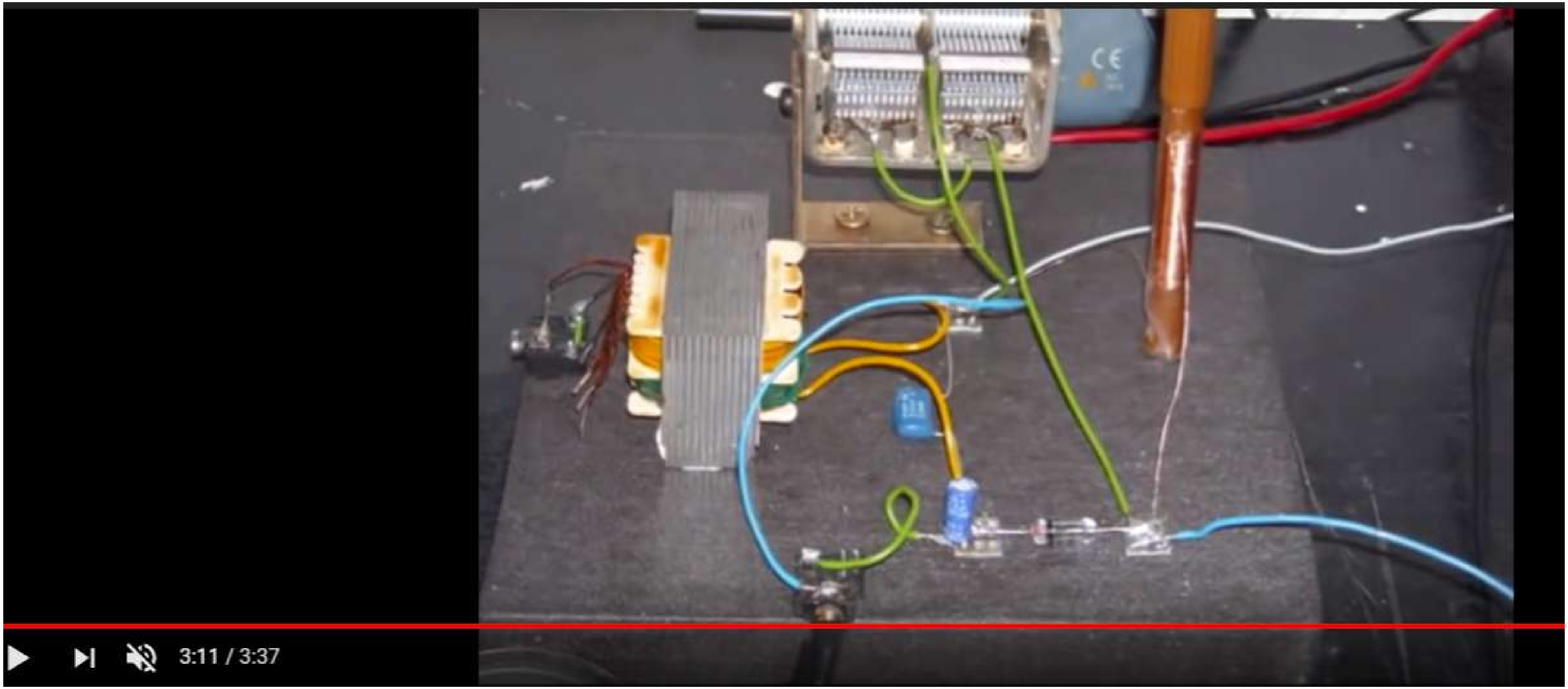
Tesla Free Energy Air Circuit





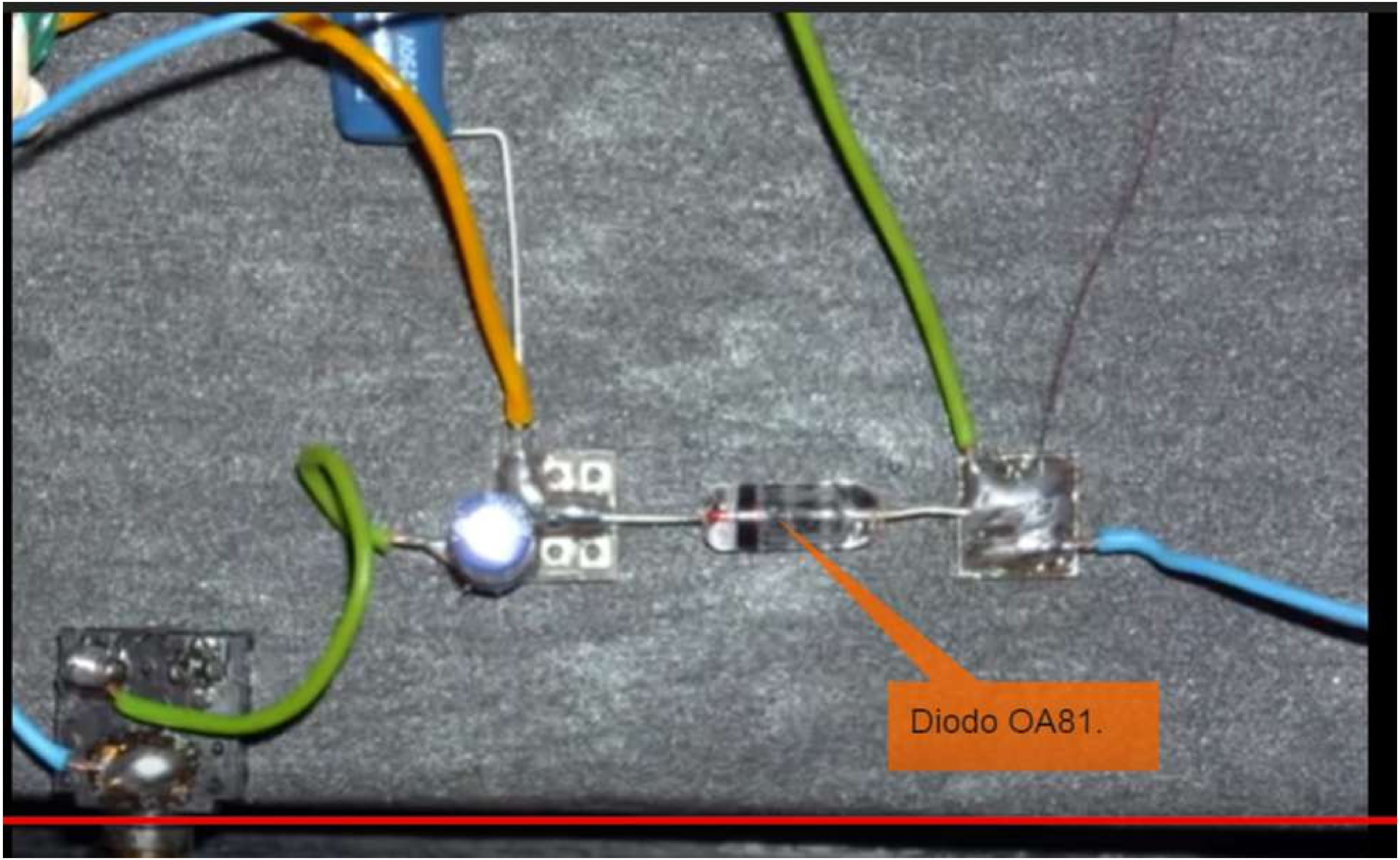
Ceramic
Earphone
Resistor
Diode
Water Pipe
100 foot antenna wire as high as possible

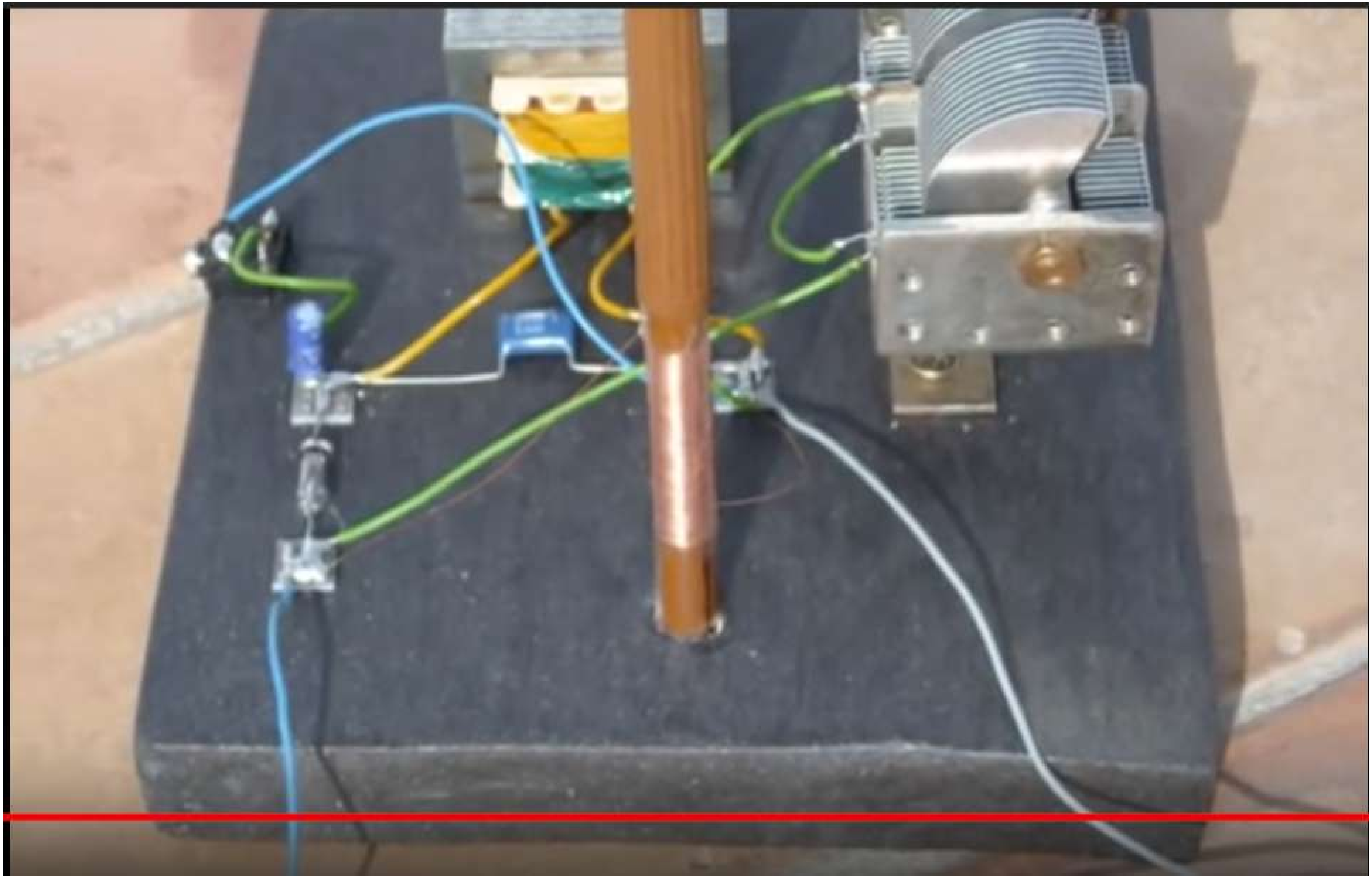

40 turns of plastic coated wire tapped
every 5 turns on a Quaker Oats Box
Aligator
Clip
Screw
To Antenna
Diode
47k
Resistor
Fahnestock Clips
(typical)
Ceramic
Earphone
To Ground

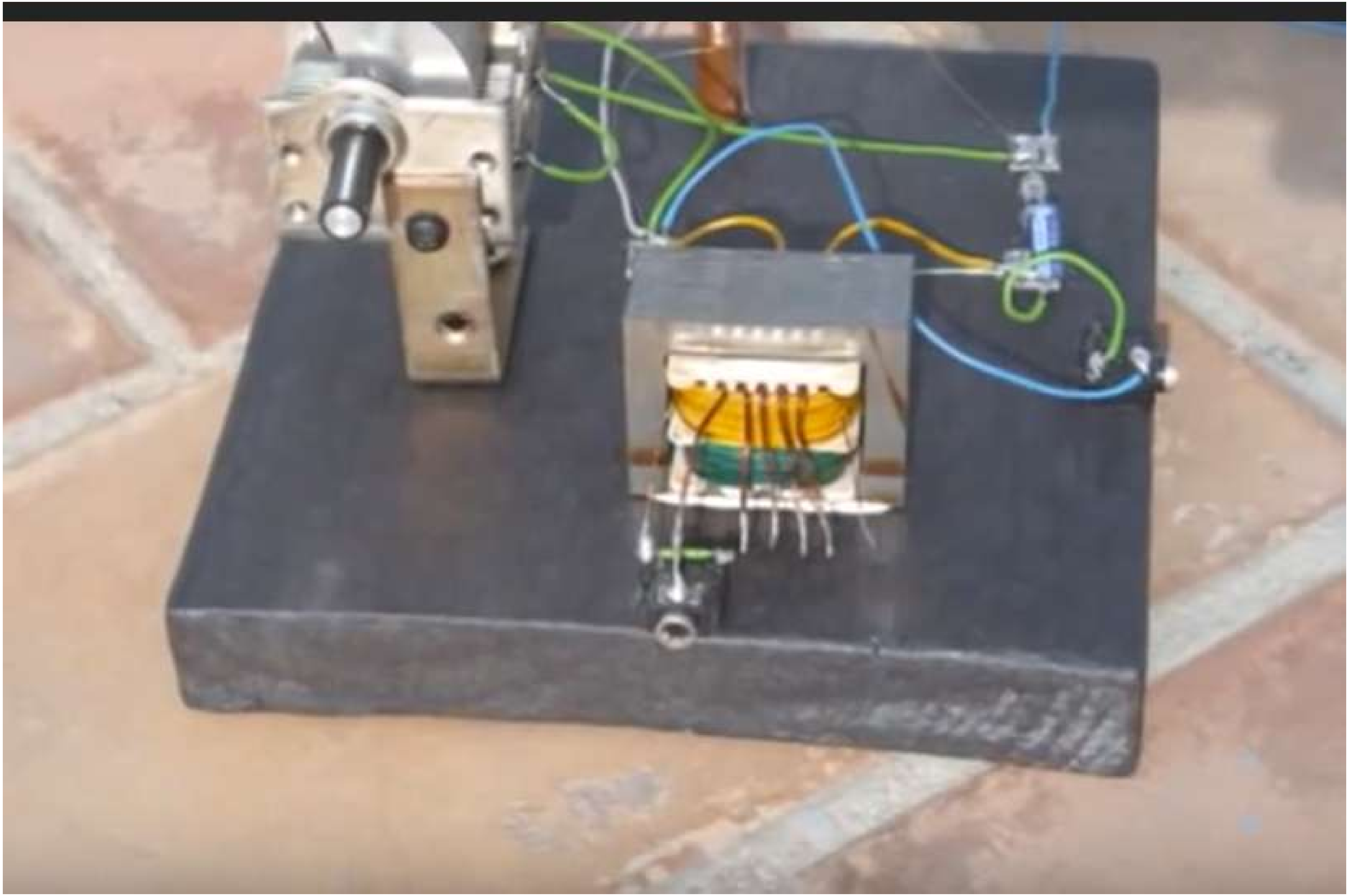


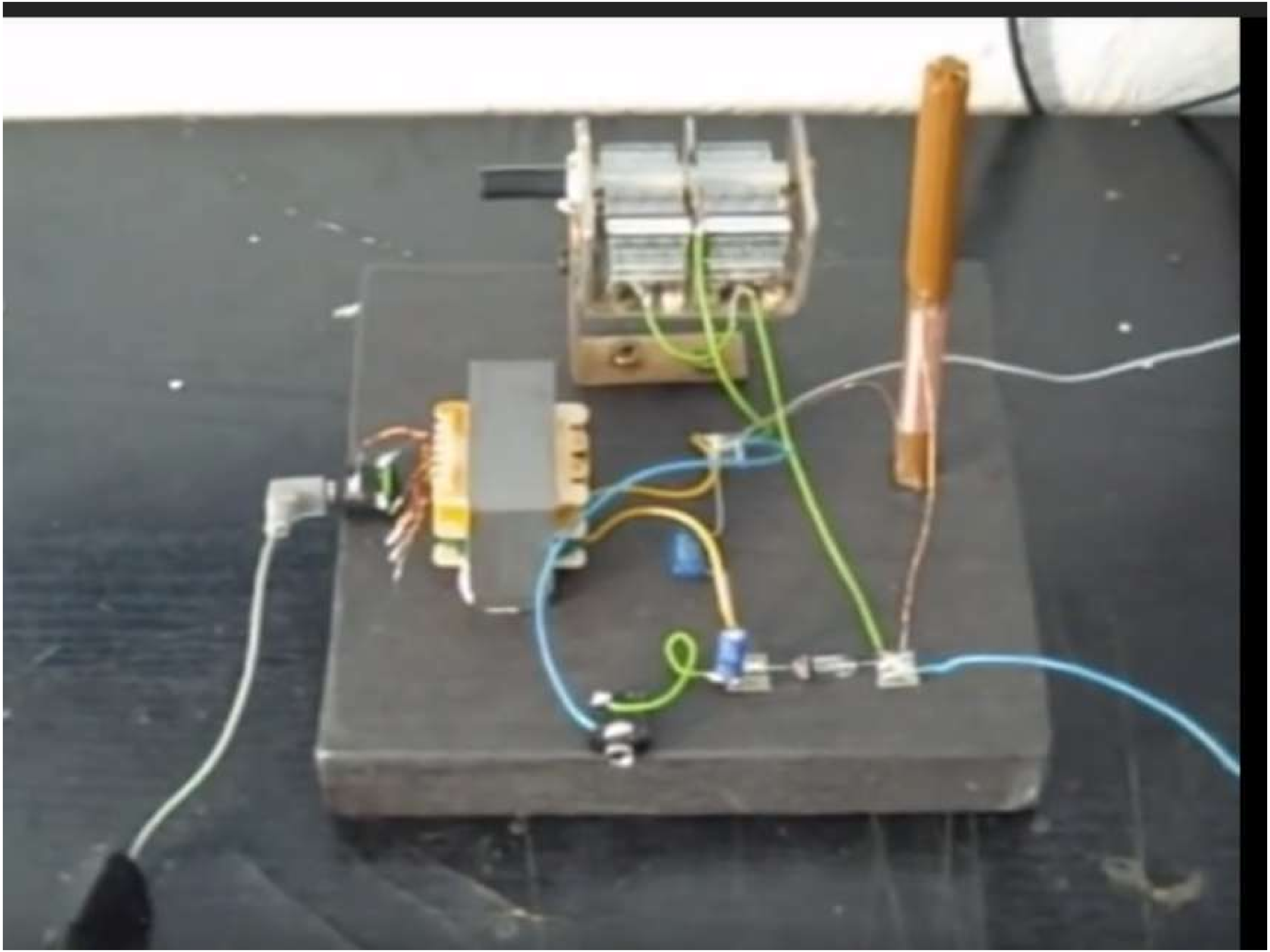
Up next

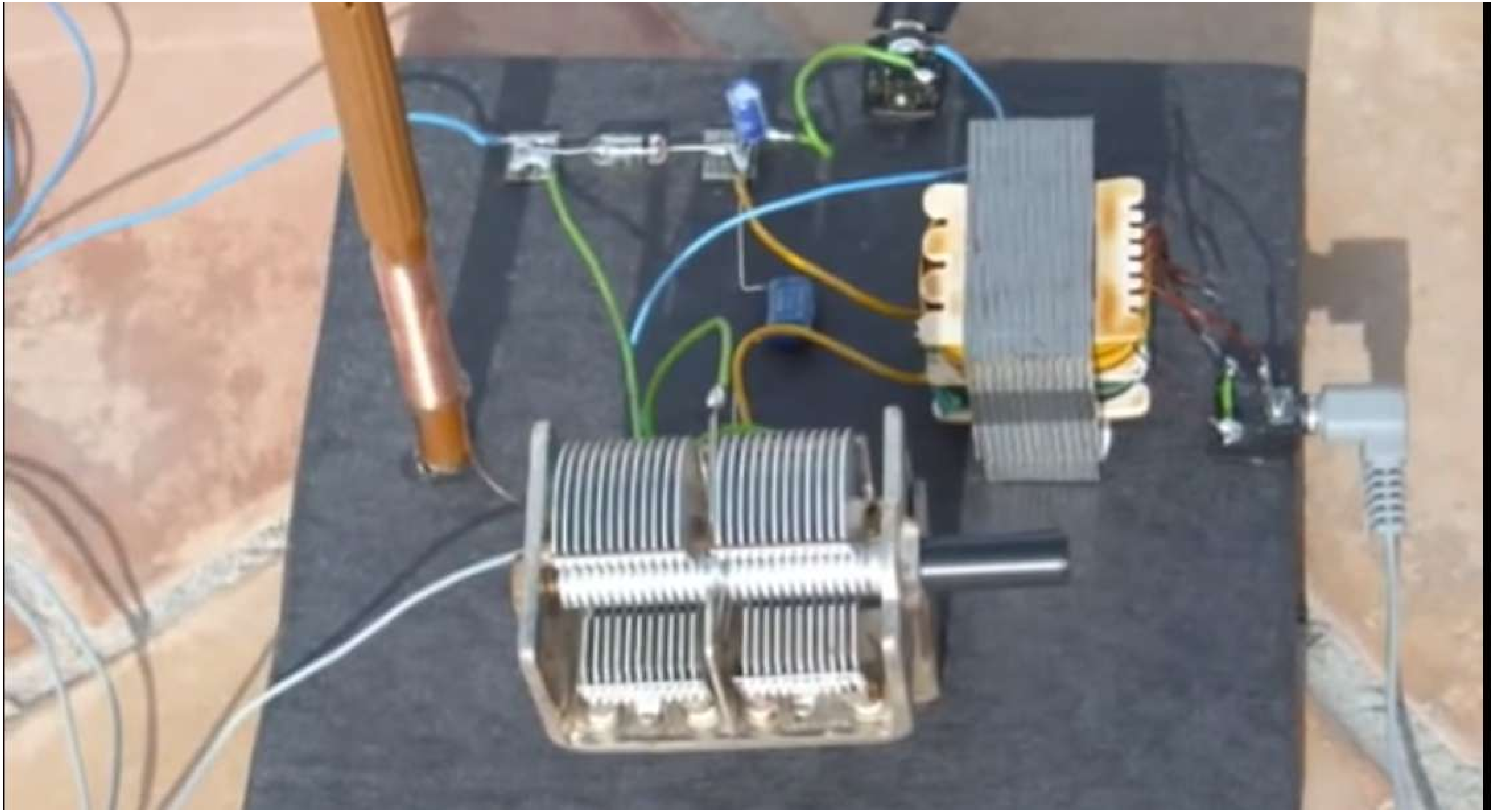
Radio Galena

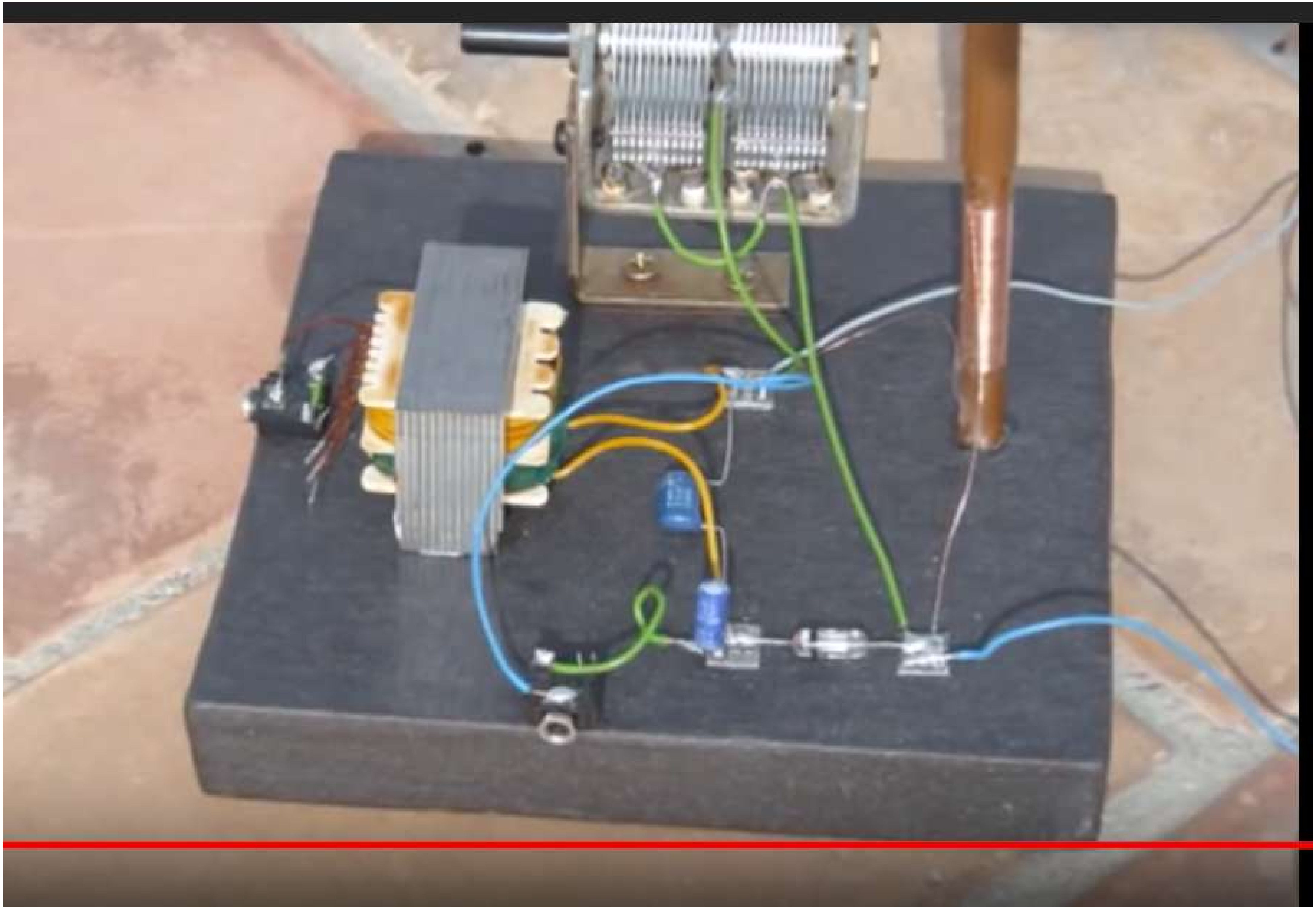

Diodo OA81.



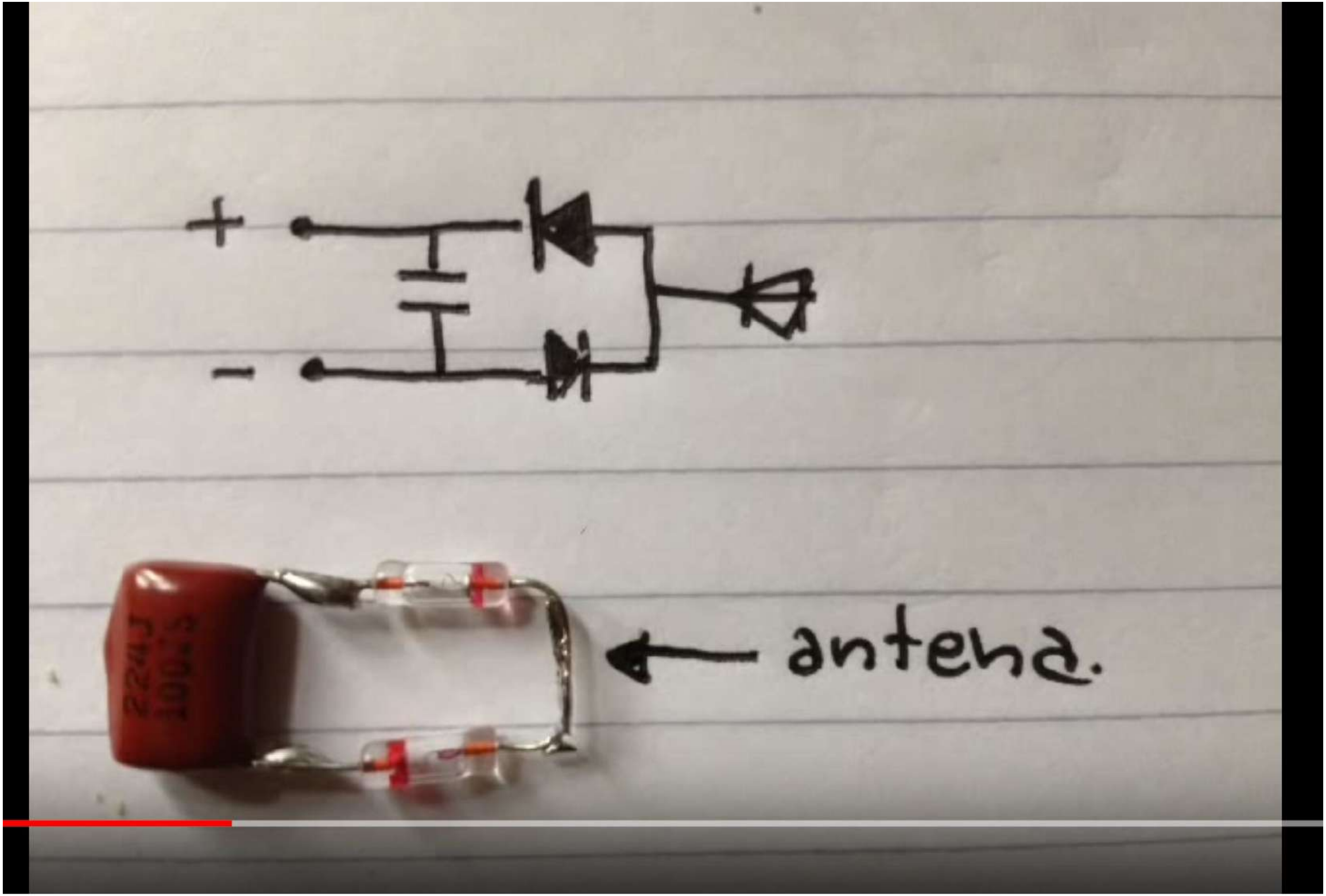


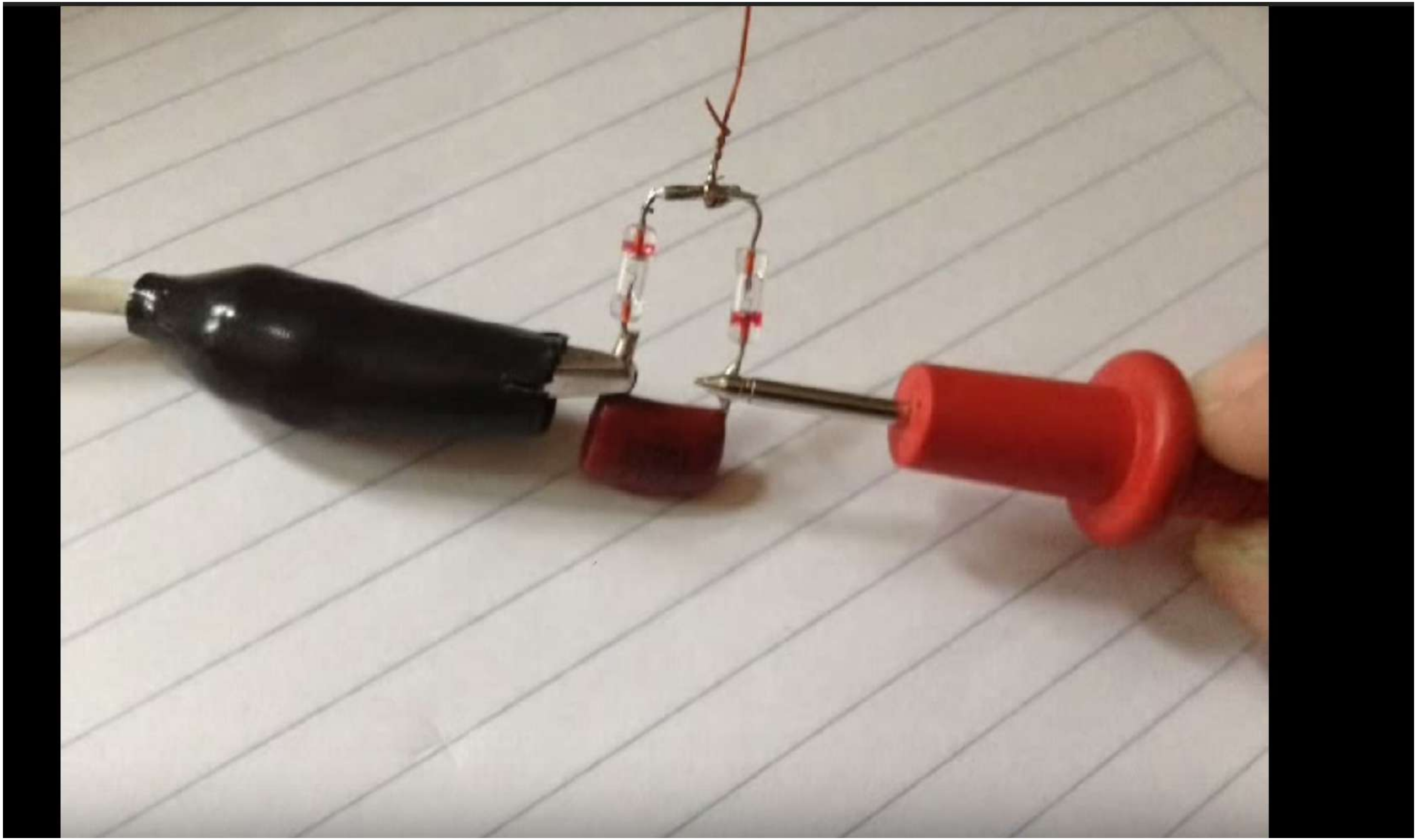






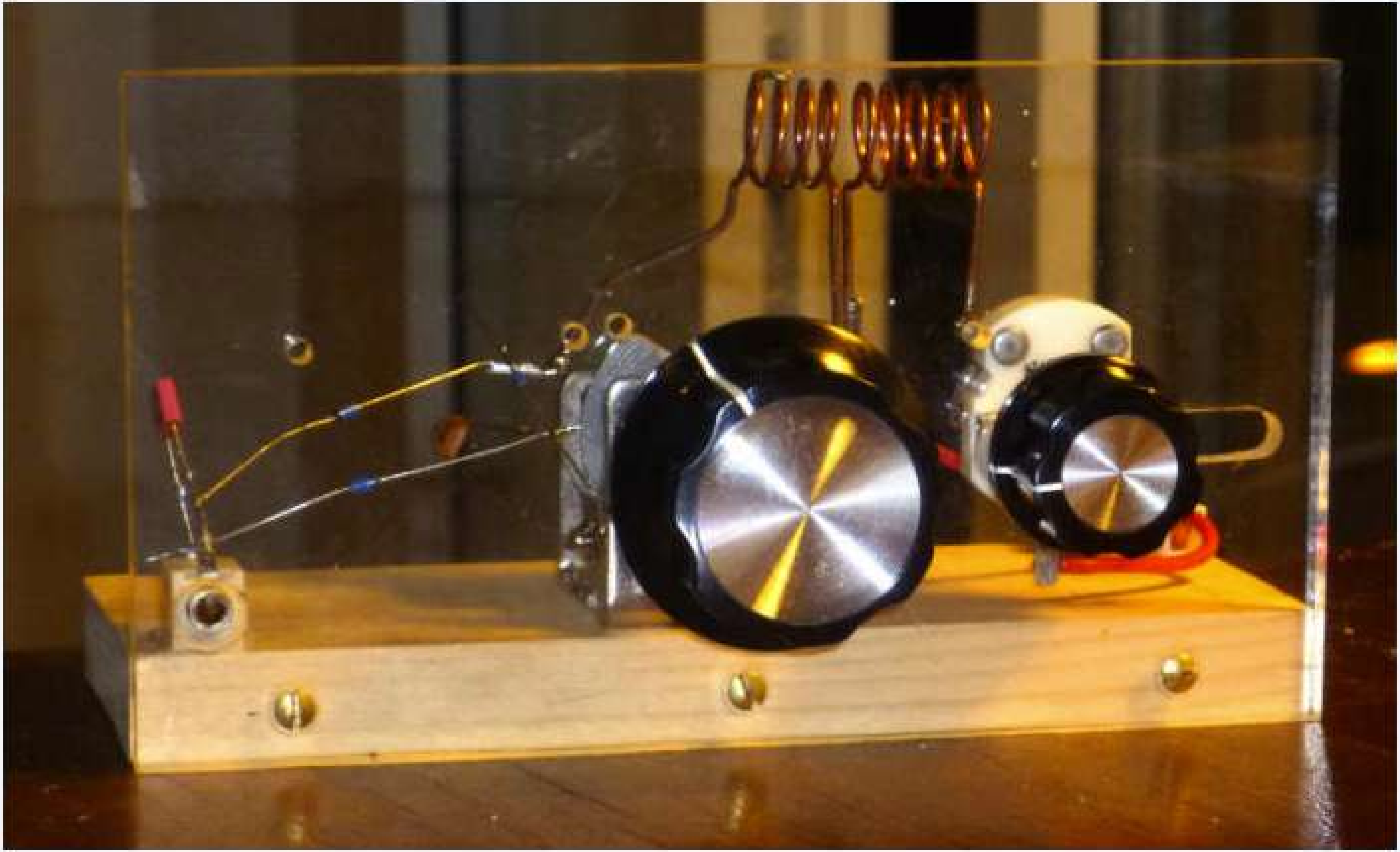

Sin las
medidas
correctas
menor
eficiencia.


+
-
antena.

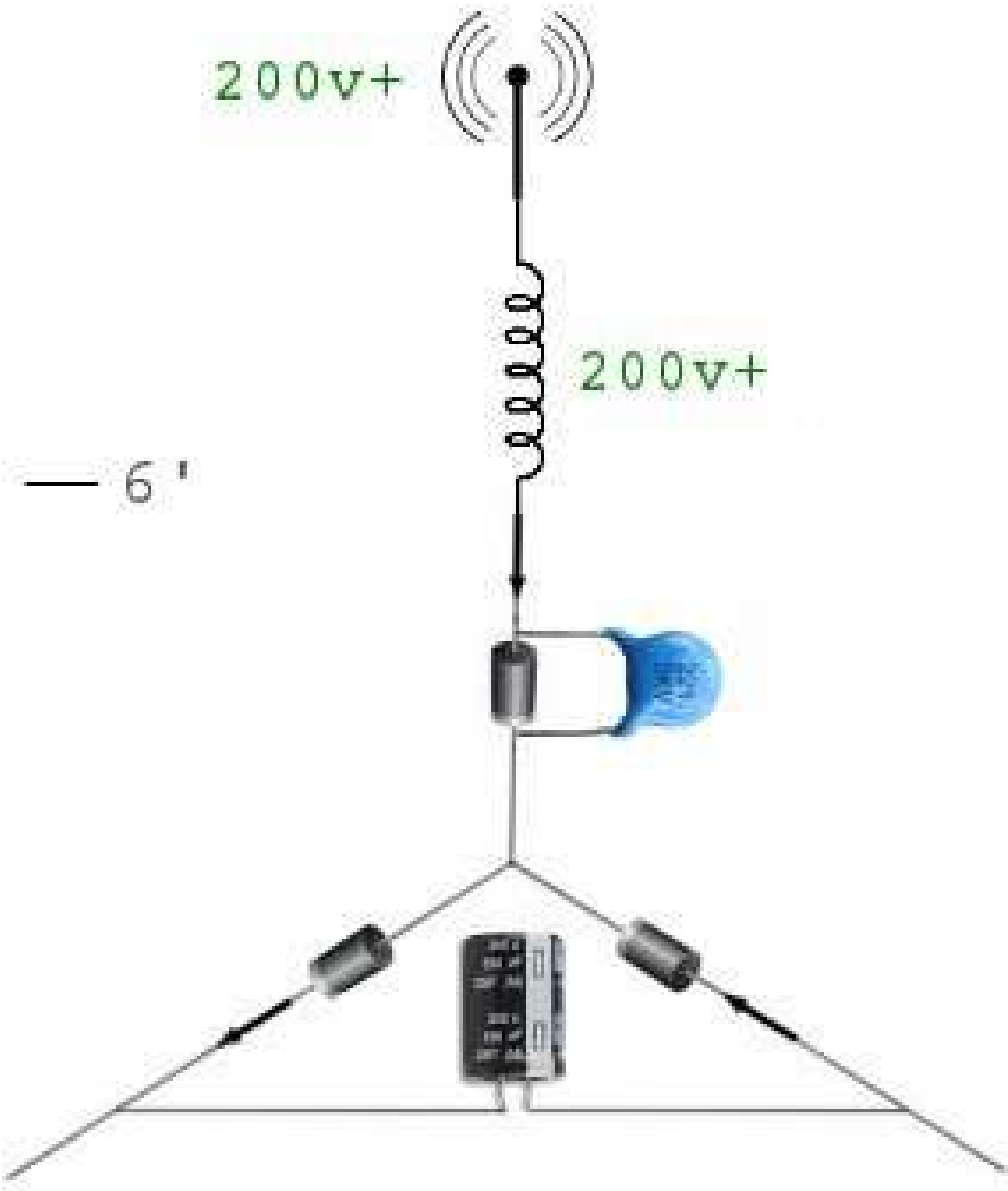


Ricevitore a cristallo per FM

Un progetto di Giacomo Cavuoti



Seguendo l'invito di Leonardo ho realizzato questo semplice ricevitore a cristallo per FM (fare clic sullo schema qua sotto per vederlo ingrandito).


200v+
200v+
— 6'

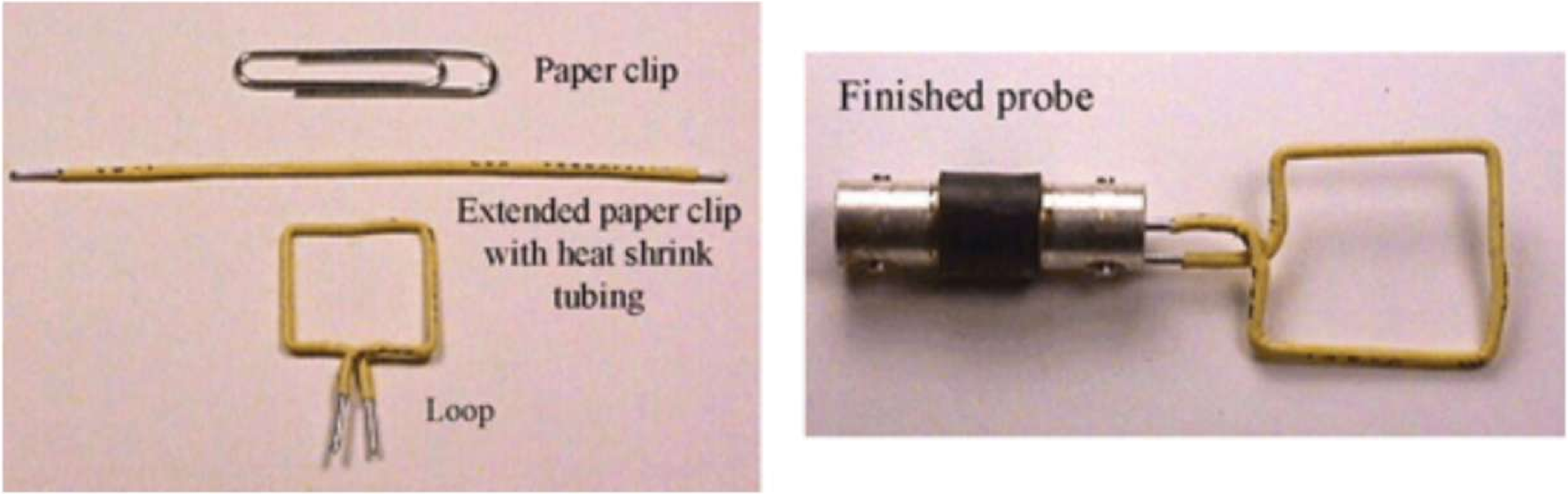
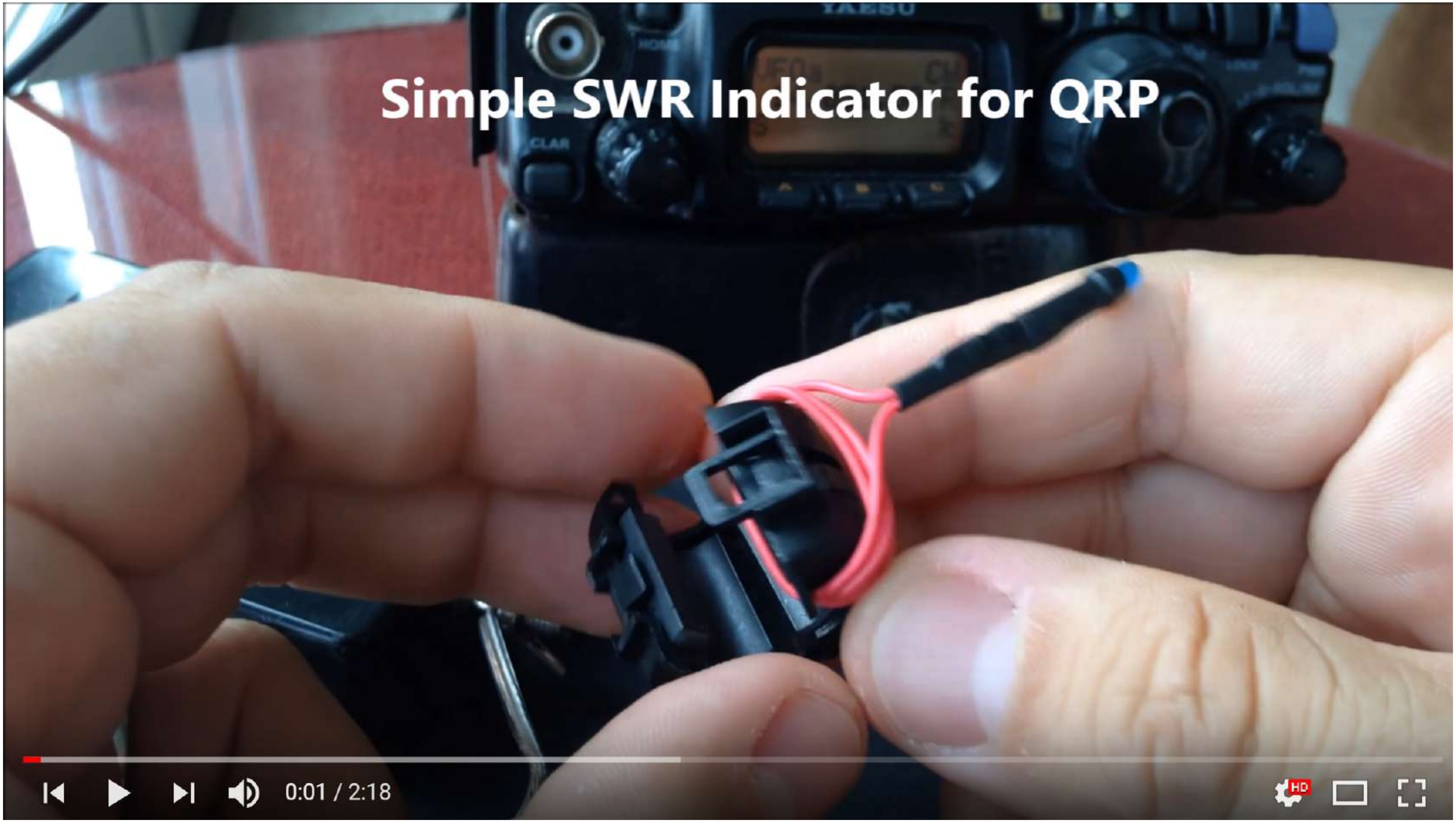
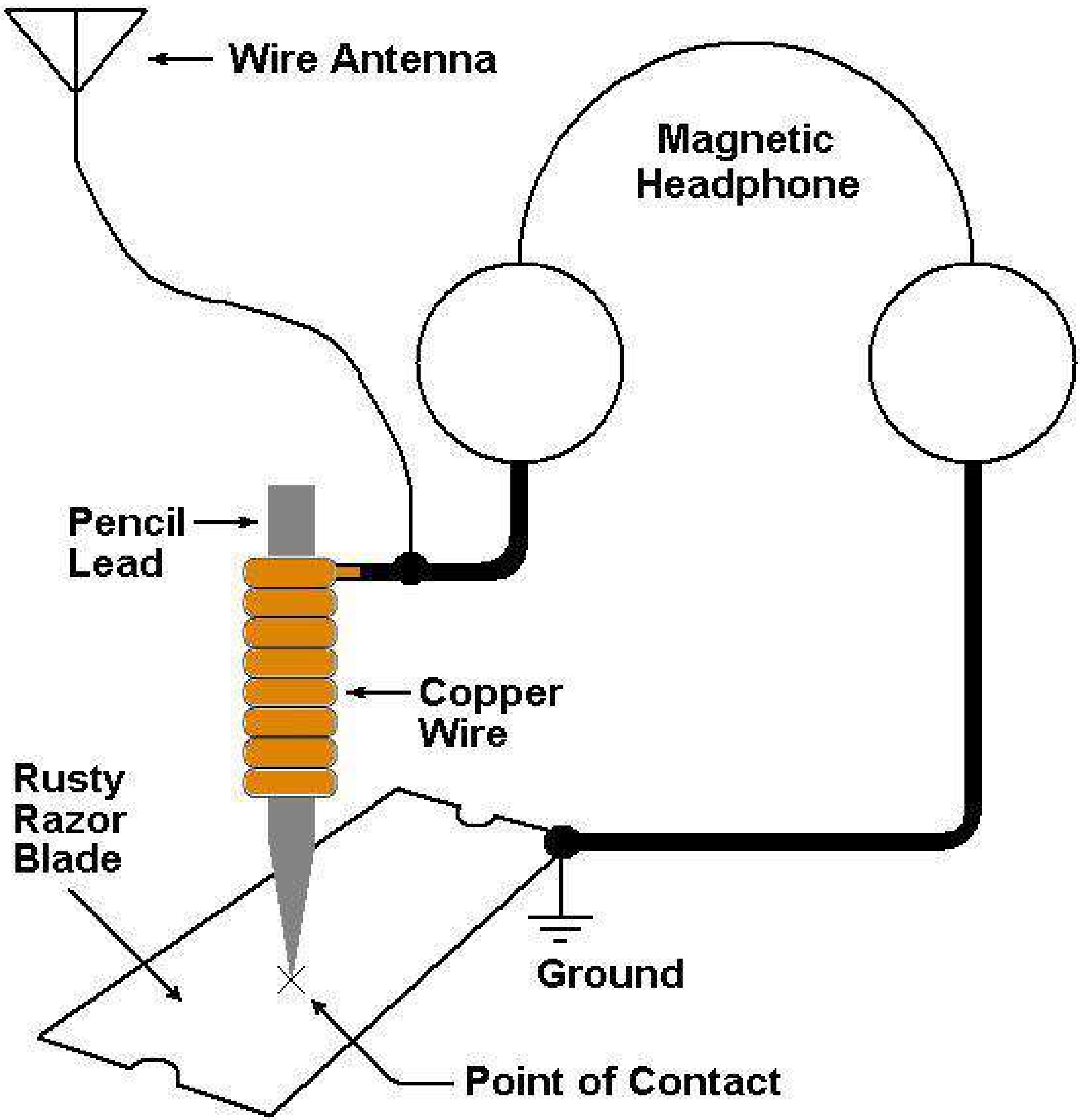


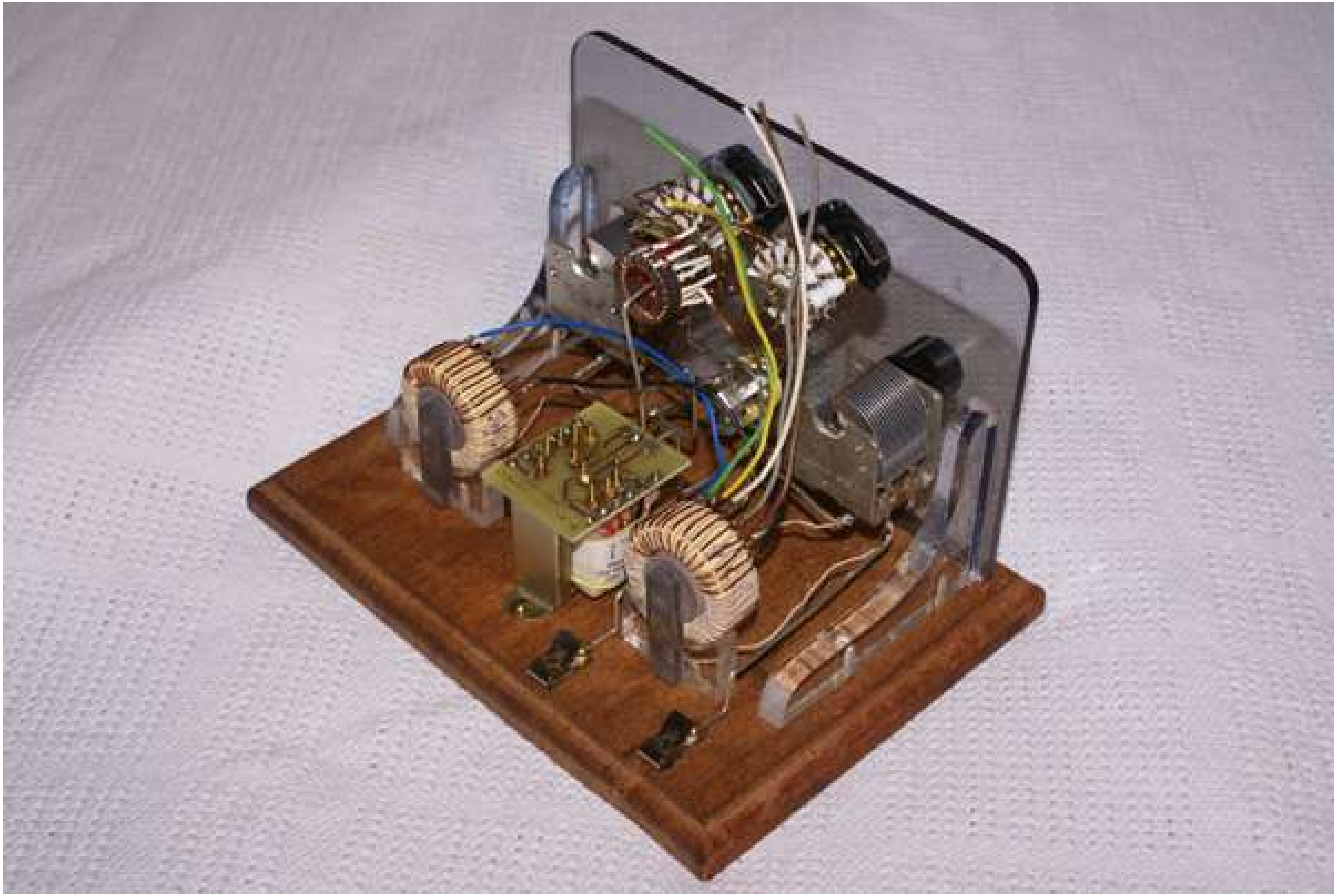
Figure 1: Magnetic field probe build from a paper clip.

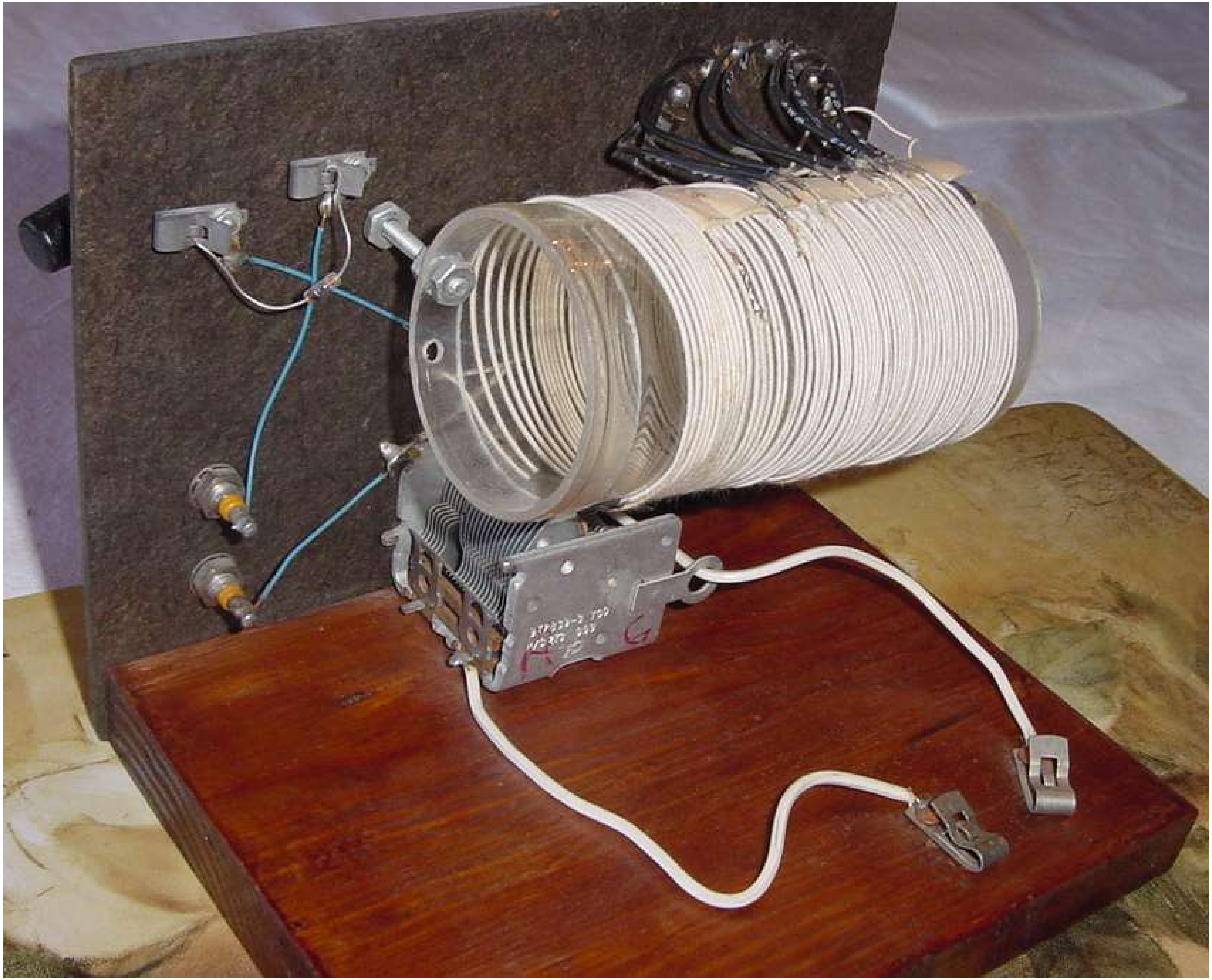

YAESU
HOME
SEL
CLAR
VFOa CW
14.054.00 R
SW
A
B
C
V/M
LOCK
PWR
AF-⊙-SQL/RF
ANT
C-POISE
1:54 / 2:18
HD



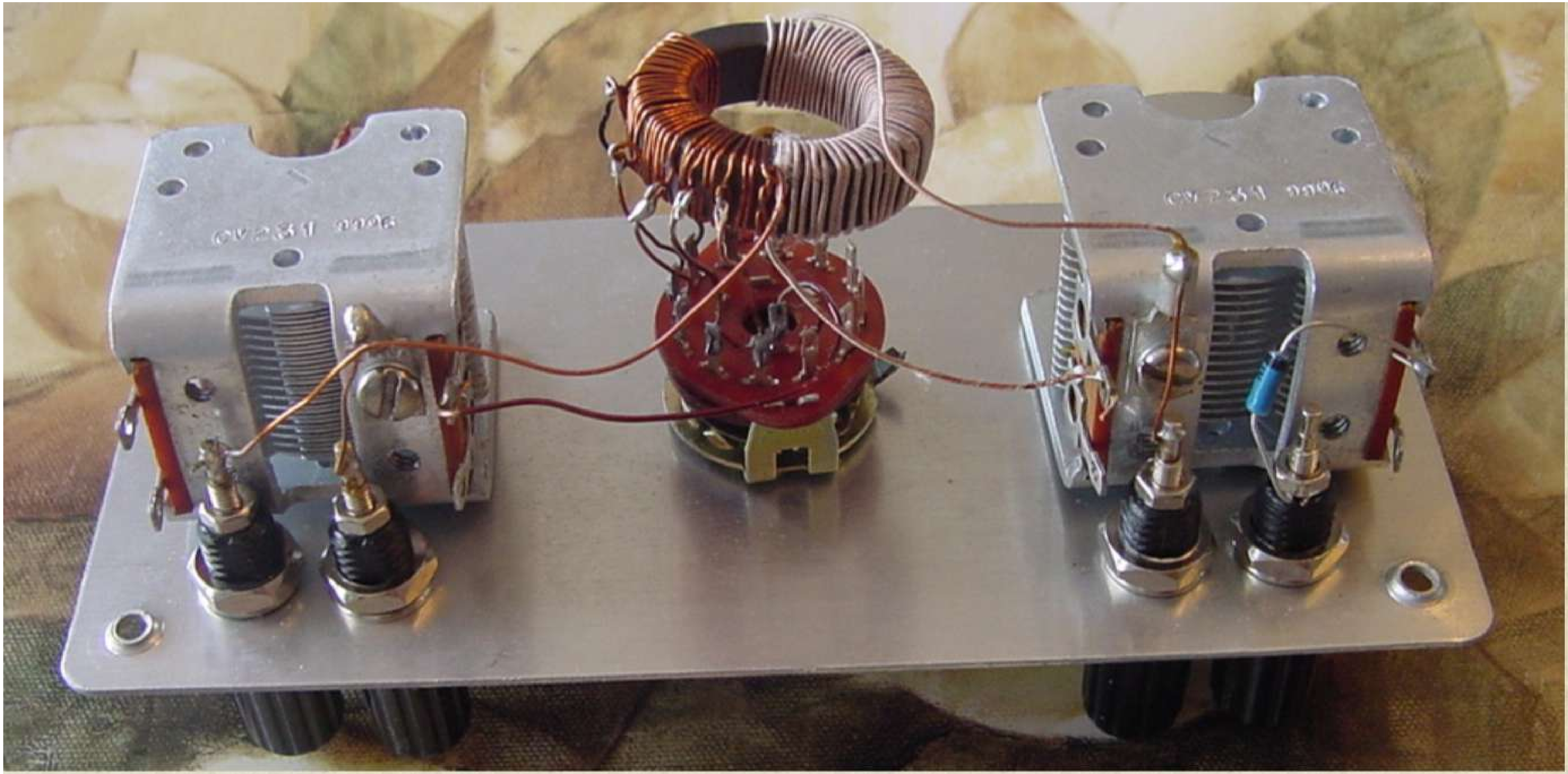
Simple SWR Indicator for QRP
YAESU
CLAR
0:01 / 2:18
HD


Wire Antenna
Magnetic
Headphone
Pencil
Lead
Copper
Wire
Rusty
Razor
Blade
Ground
Point of Contact

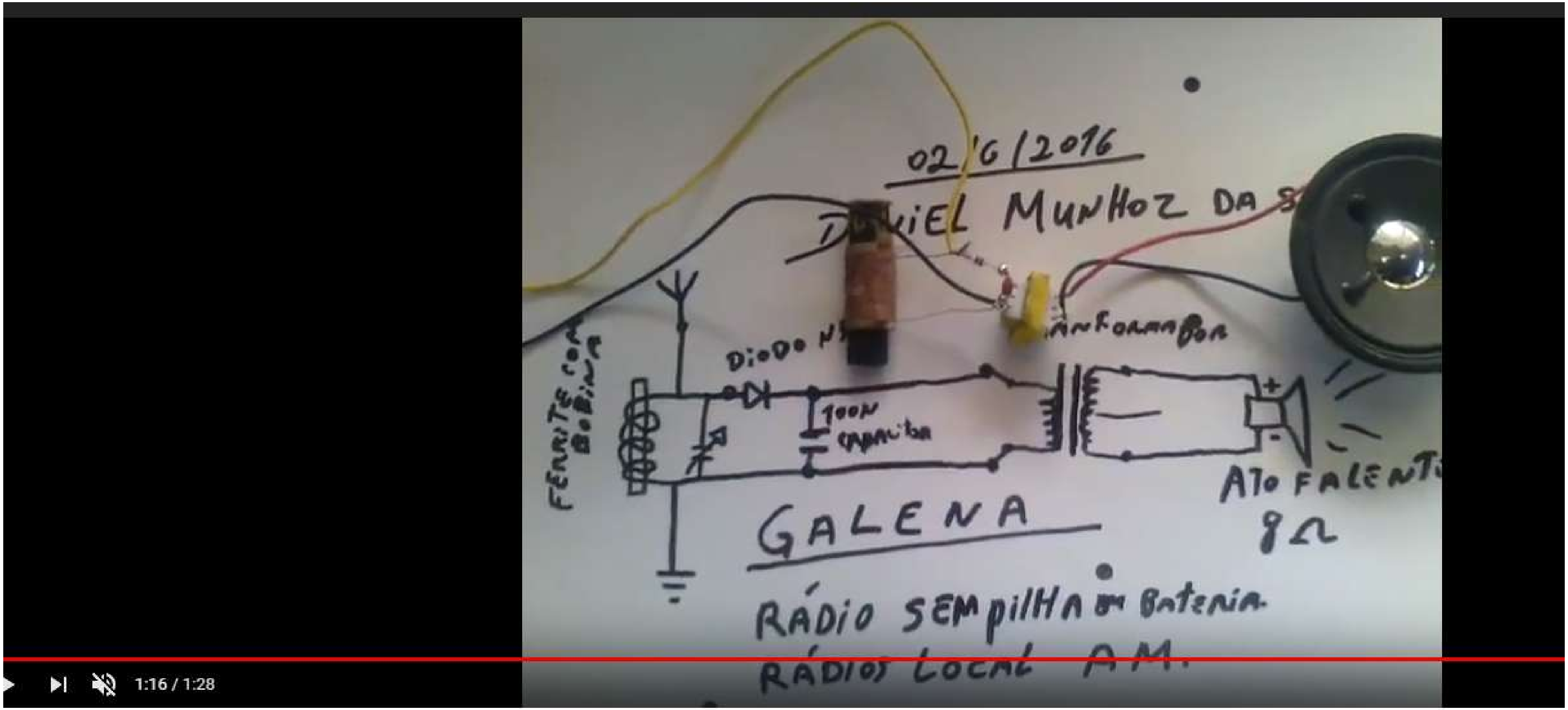



A
G

Another Prototype similar to the Heathkit using toroid coil

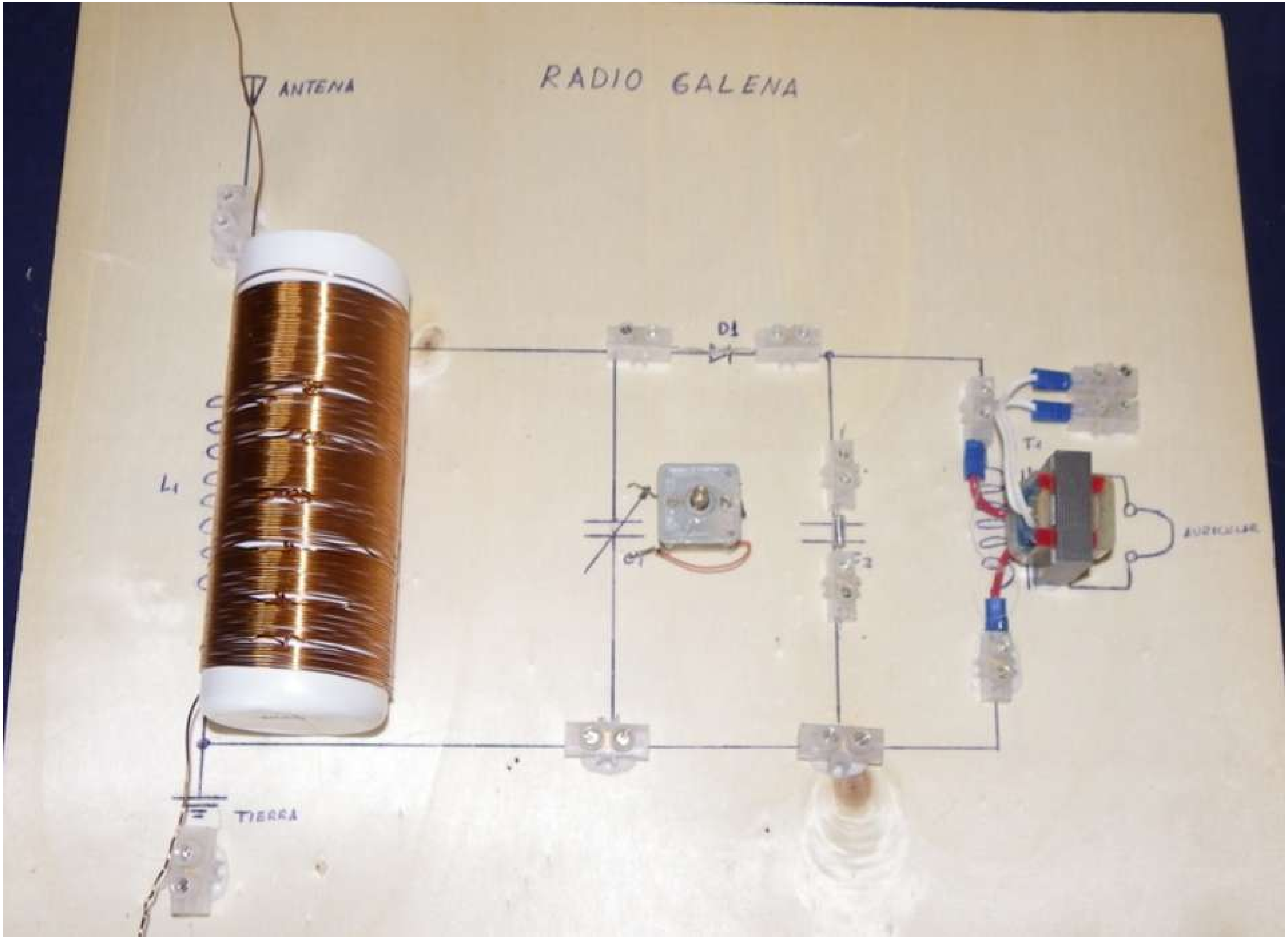


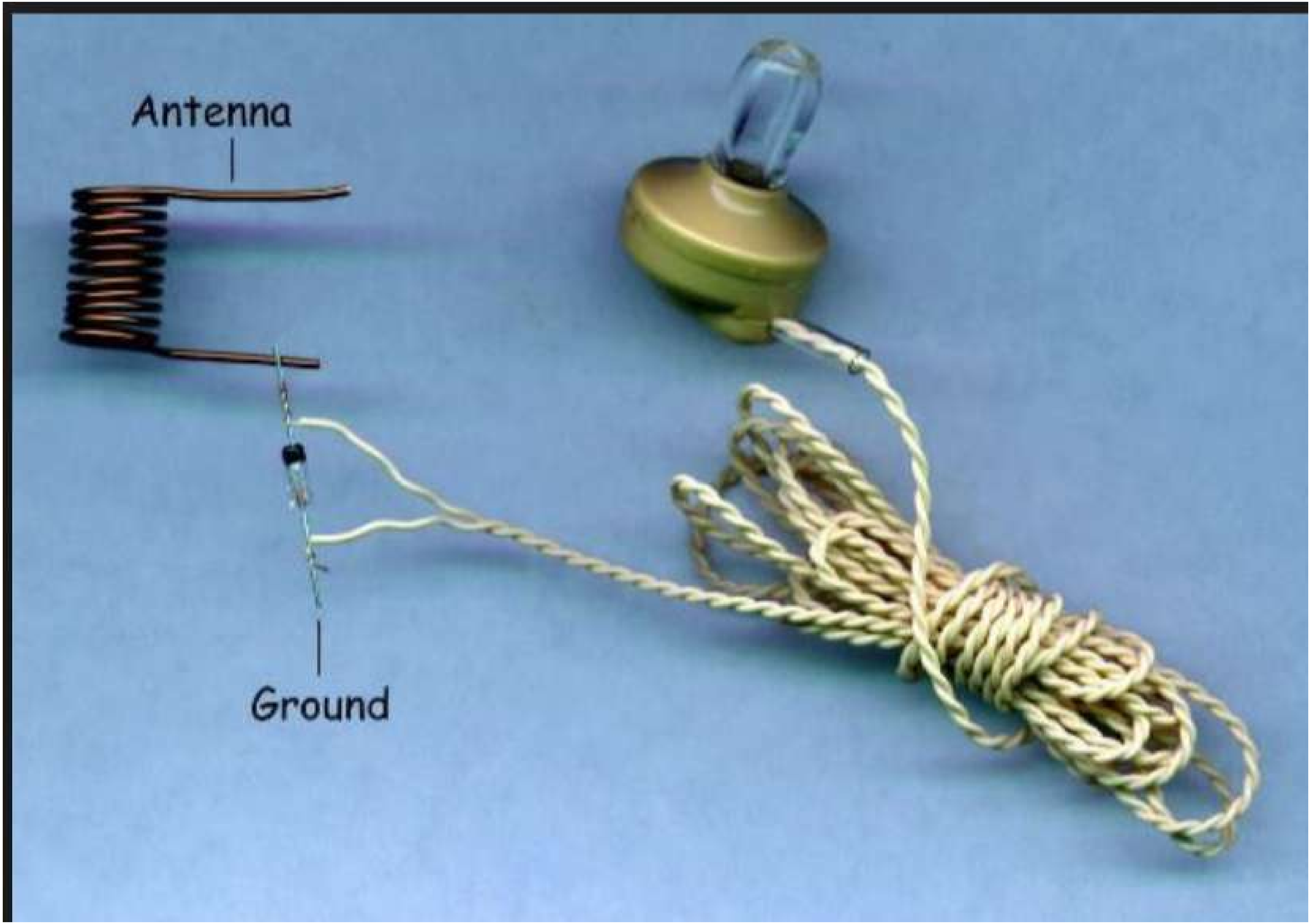
This is a dual tuned crystal set made in a box like the CR-1, just a fun prototype I made a few years back. It pulls in AM stations loud and clear.

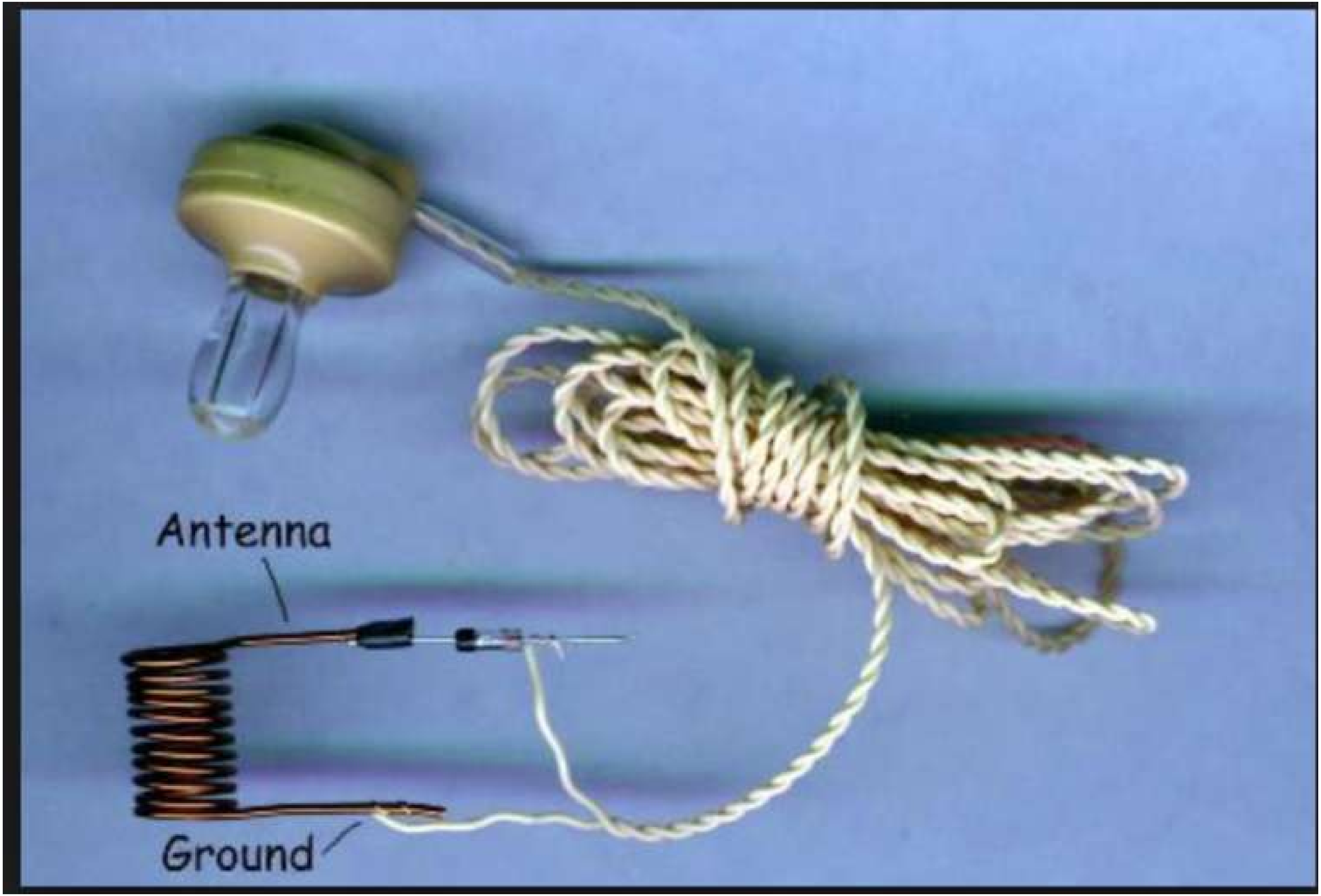


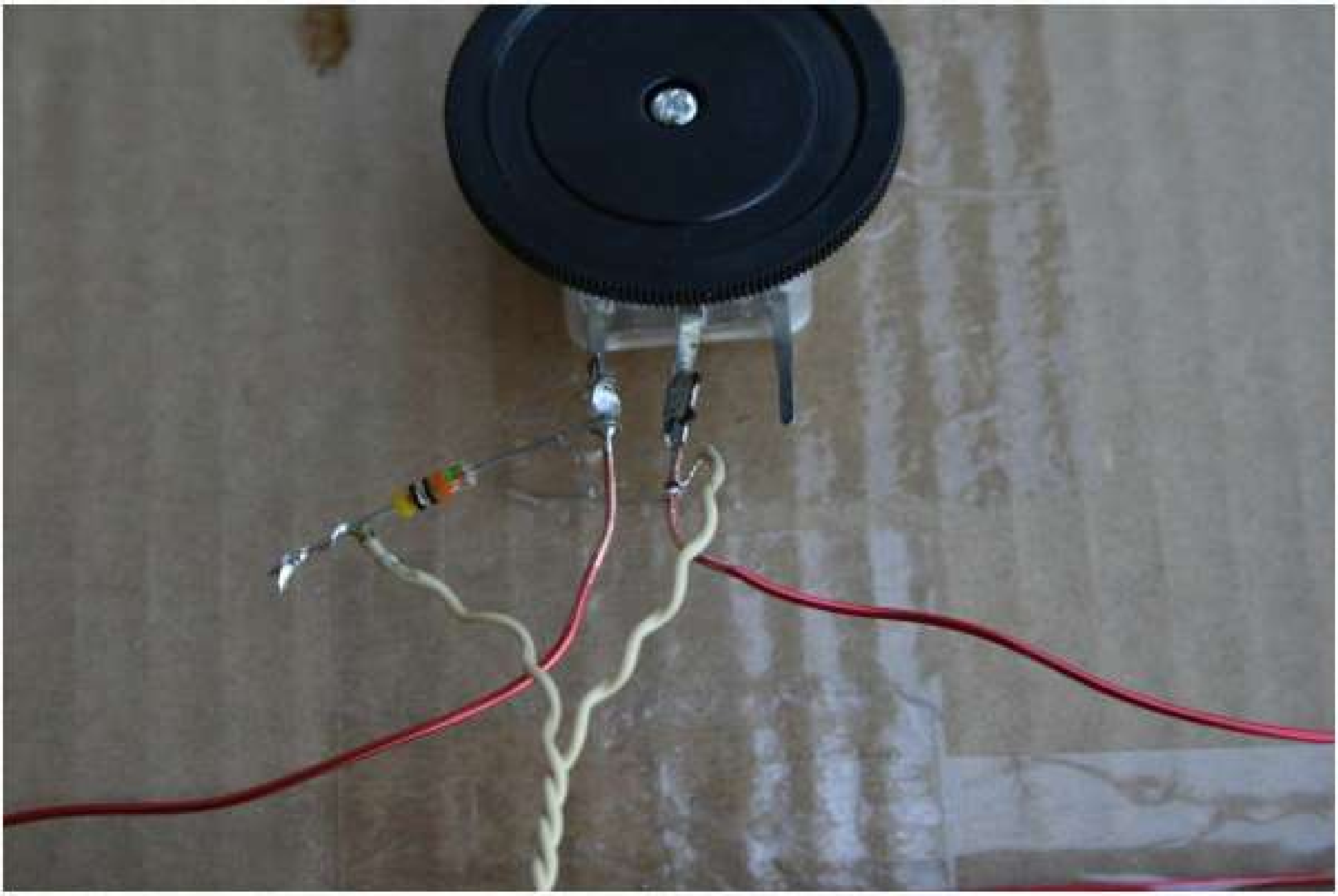
GALENA , Rádio AM ,sem pilha.

Up next

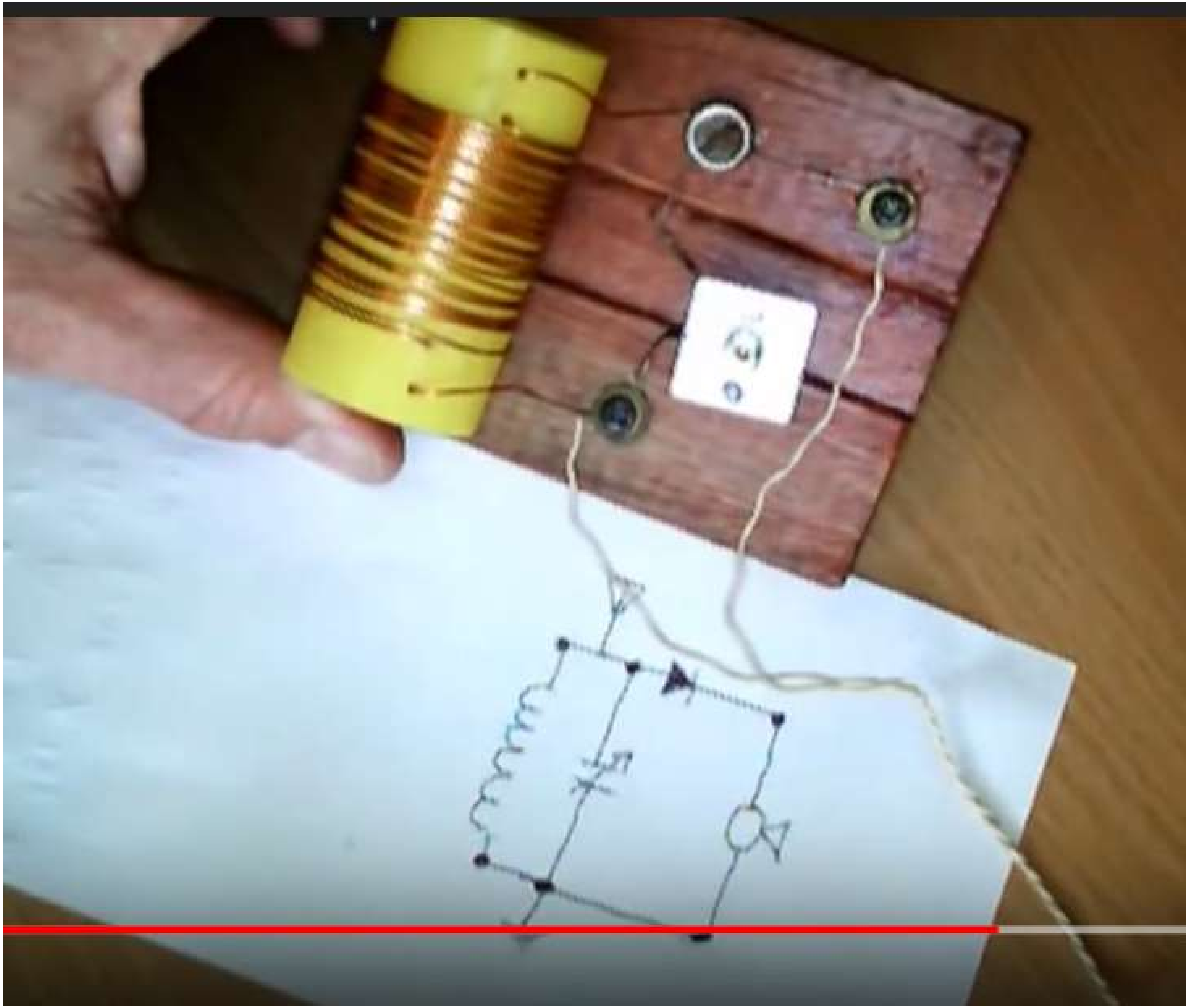

RADIO GALENA
ANTENA
D1
L1
C1
T1
AURICULAR
TIERRA

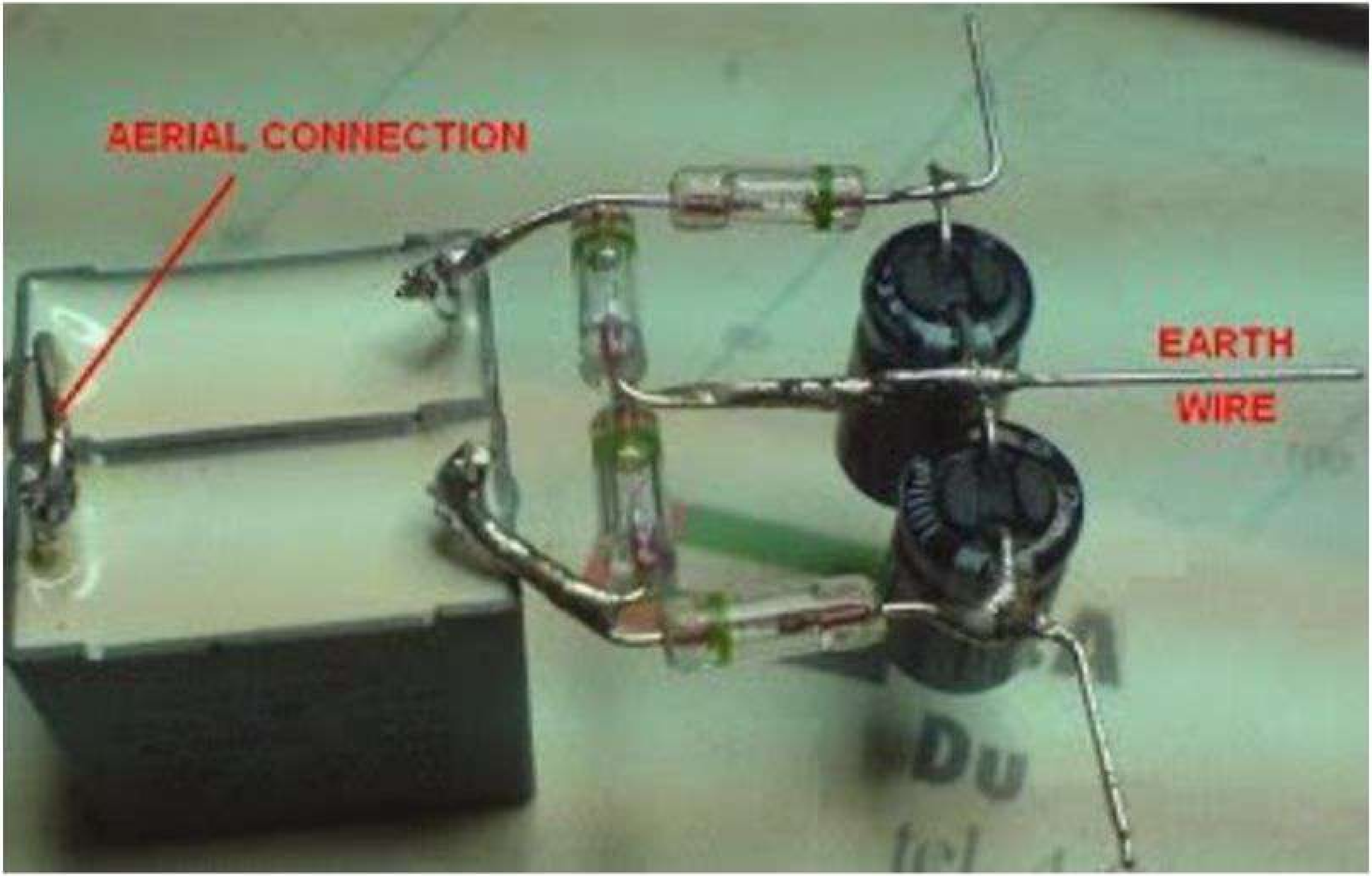

Antenna
Ground

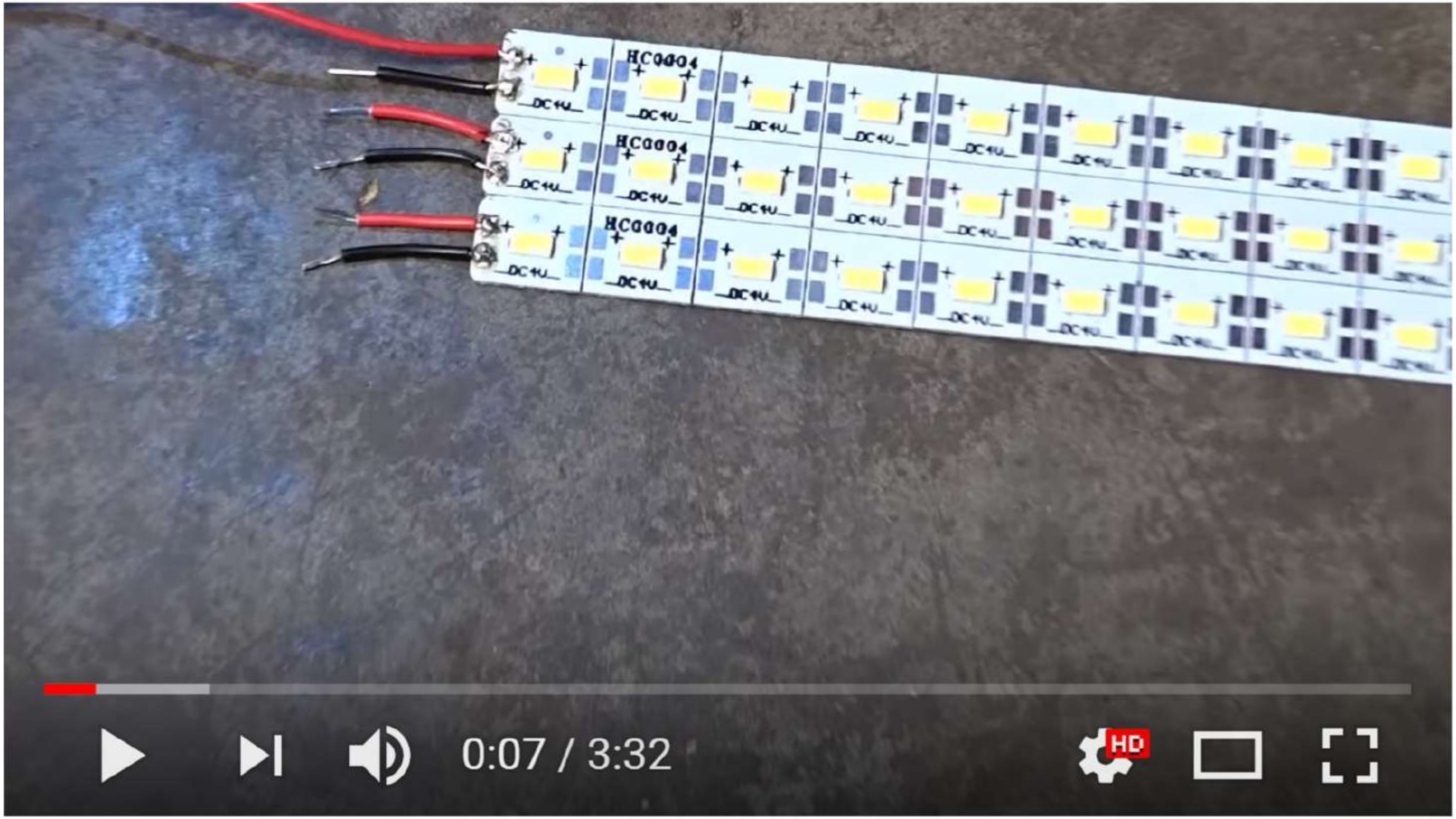

Antenna
Ground



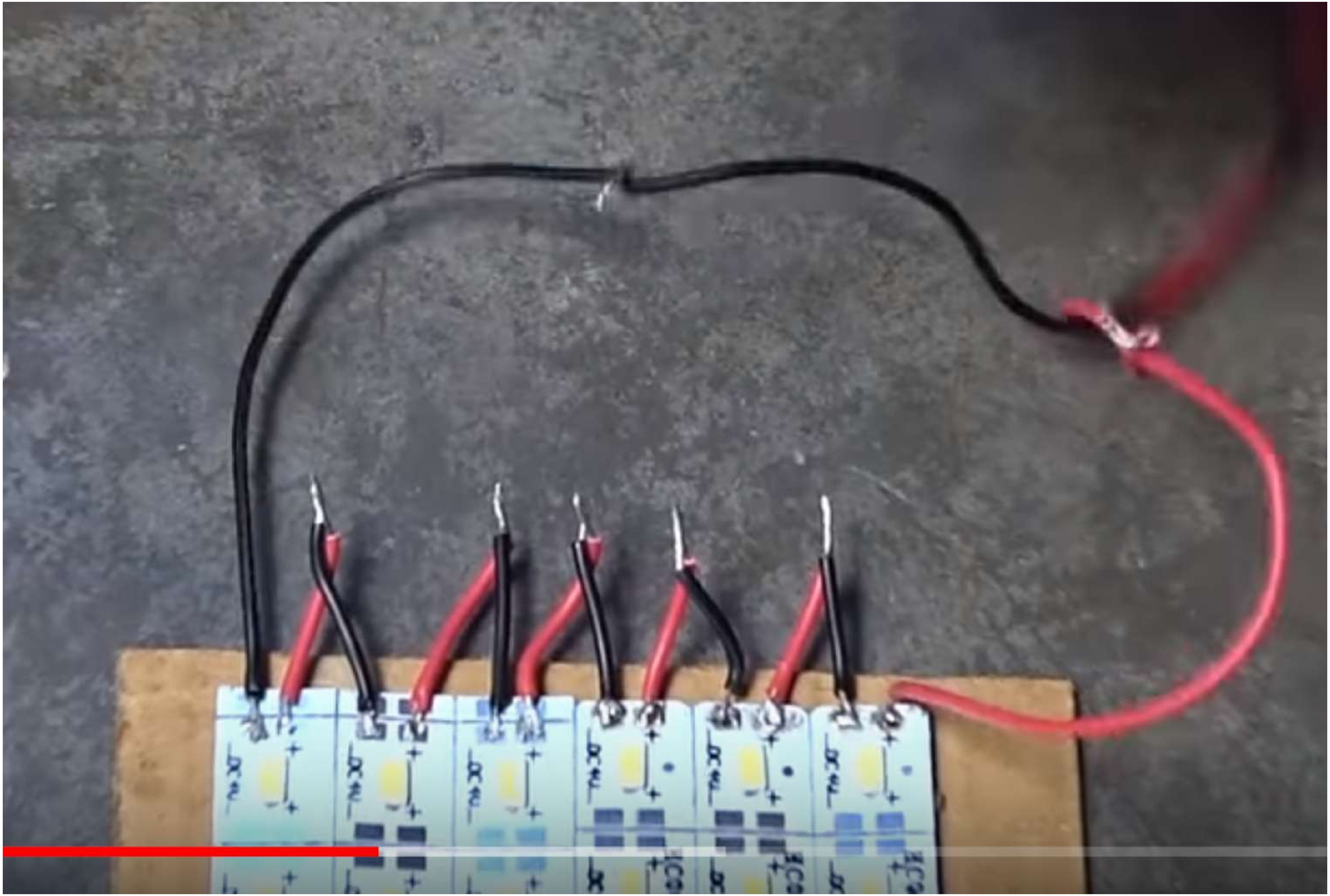
Click on photo for a larger picture

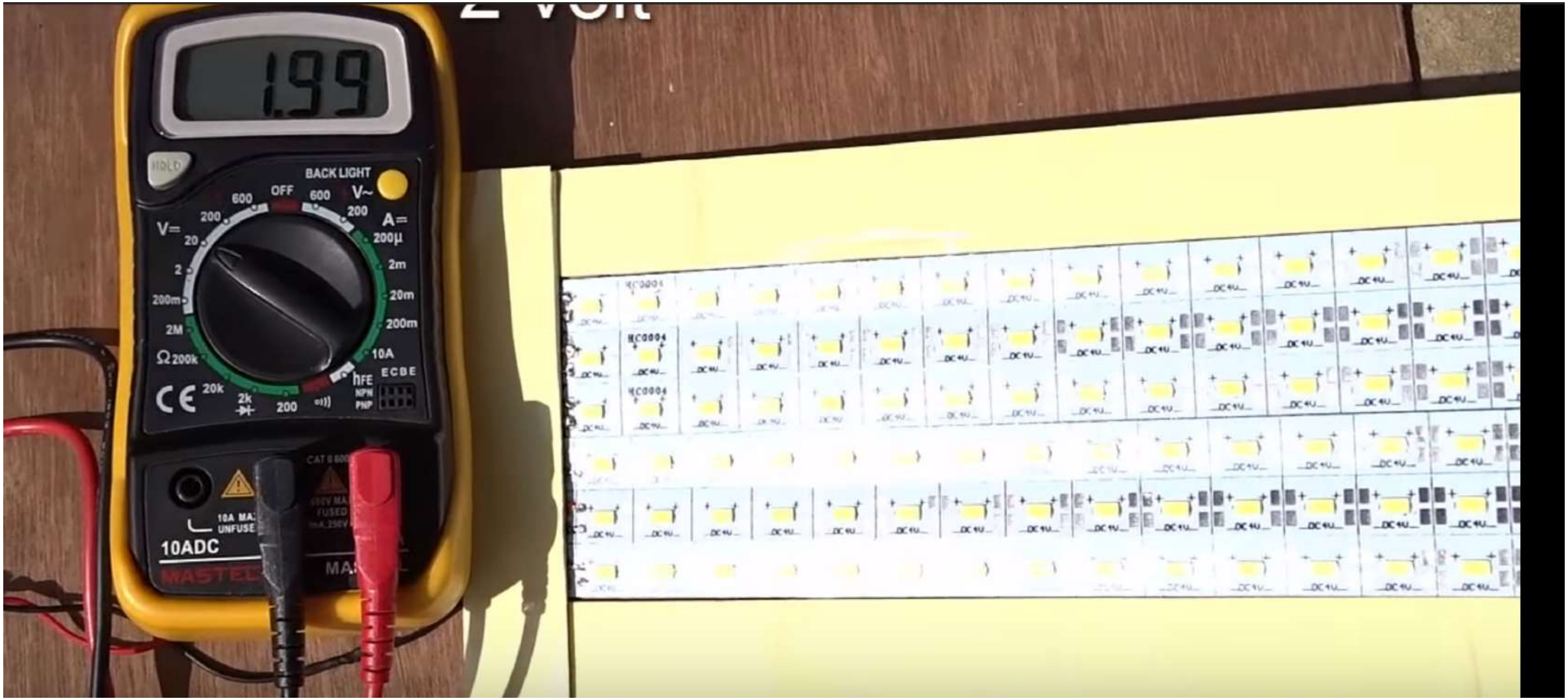



AERIAL CONNECTION
EARTH
WIRE

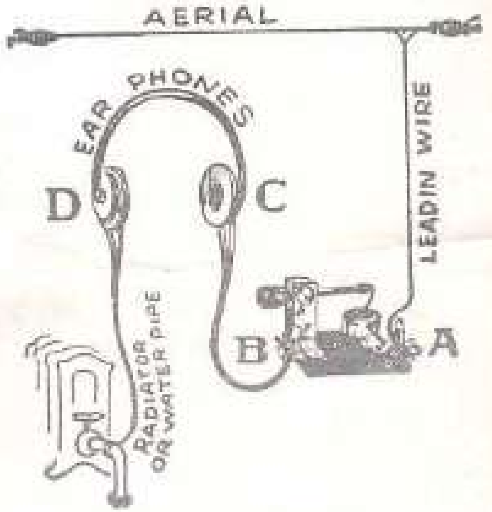


New idea - You can make Solar Cell from LED (Free Energy)




1.99
HOLD
BACK LIGHT
OFF
600
200
20
2
200m
2M
Ω200k
20k
2k
V=
V~
A=
200µ
2m
20m
10A
hFE
ECBE
NPN
PNP
CE
10ADC
DC 4V

Instructions for using Philmore Crystal Radio Detector



This Detector is a radio in itself, as it is possible to get reception with it alone, provided you are within 25 miles of a broadcasting station. Under very favorable conditions reception is sometimes possible at much greater distances.

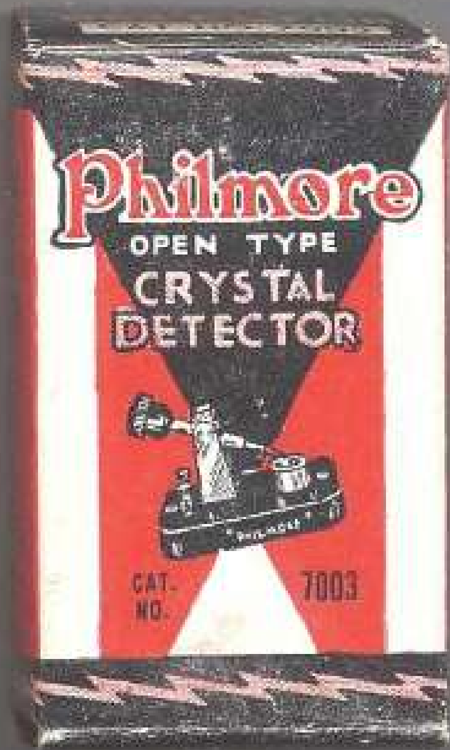
In order to get reception, you need an aerial kit and headphones. The AERIAL may consist of 100 to 125 feet of copper wire and two insulators. Attach insulators to each end of the wire. Stretch the wire allowing as little sag as possible. No part of this wire should touch any portion of the building or any other obstruction.

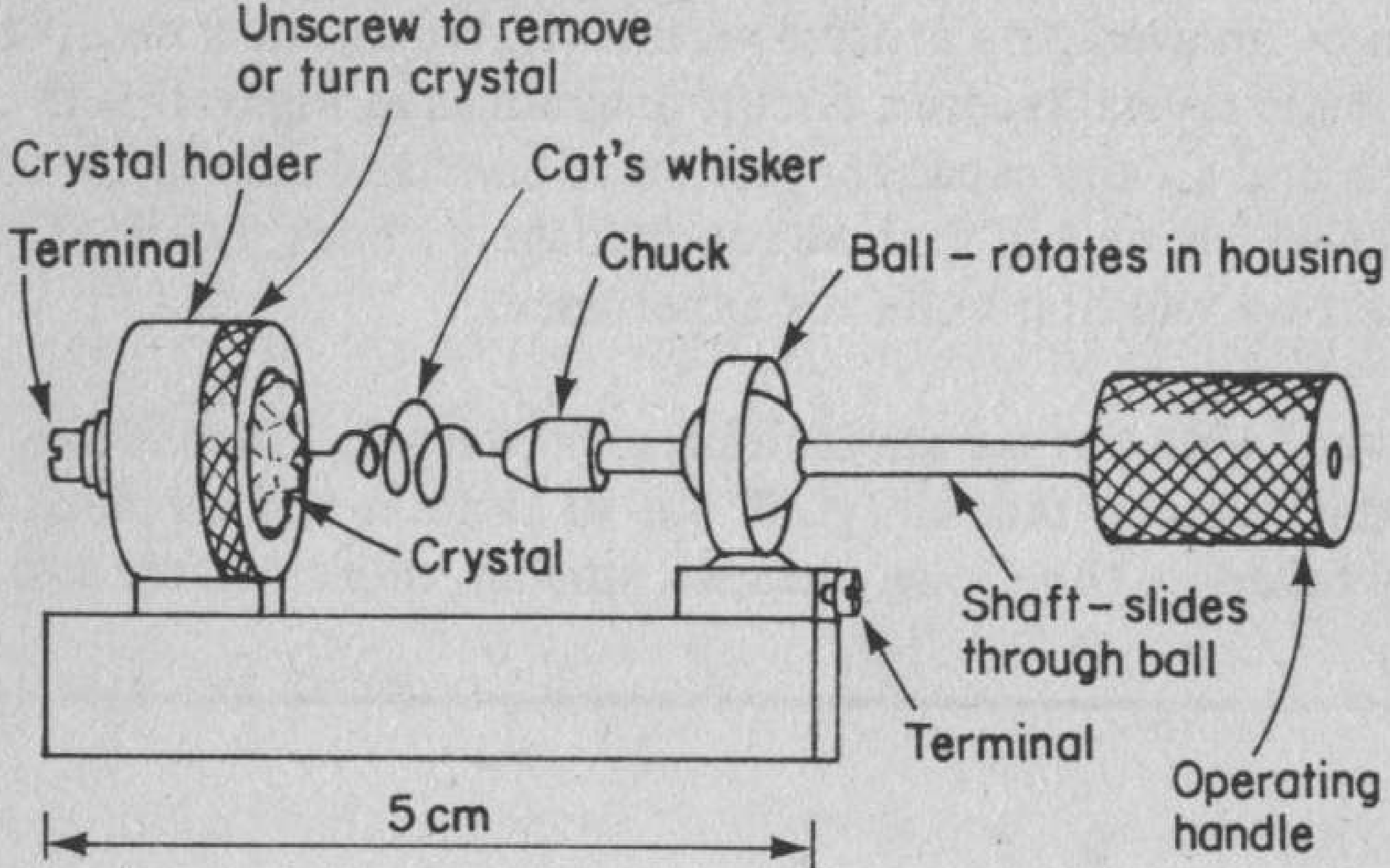
The LEAD-IN may consist of any desired length of covered wire which will reach from the aerial to the set. Scrape each end of the lead-in so that the wire is absolutely clean. Wind one end securely around the aerial wire. Place the other end in the clip marked "A".

There are two cords leading from the headphones. Connect the cord "C" as illustrated, from the earphone to clip "B" or the clip under the detector arm. The other wire from the earphone marked "D" is to be connected to water pipe, radiator or any other suitable connection to be used for the ground.

You are now ready to receive broadcast. Find a sensitive spot on the crystal by means of the catswhisker. You may find it necessary to "hunt" for live spots on the crystal as only some parts of a crystal are sensitive, and unless you find these sensitive spots you will not hear anything.

If you do not at first get results, do not blame the detector, as every set is tested before being shipped and will positively get results under the proper conditions. Do not write in and ask what the trouble is for a personal examination of your entire hook-up will be necessary. Go over your aerial, ground, various connections, etc., and if necessary get someone who thoroughly understands radios to help you.





Modern diode (7·5 X 2·5 mm)

Majoritatea componentelor active folosite în circuitele electronice moderne sînt dispozitivele bazate pe semiconductoare.

Cel mai simplu dispozitiv este *dioda* punctiformă cu germaniu. Ea are proprietatea de bază de a se comporta ca şi cum este conectată direct la o sursă electrică de curent continuu (plusul sursei la plusul diodei) şi ca un izolator, cînd este conectată invers la aceeaşi sursă (plusul sursei la minusul diodei), ca în figura 2.9.

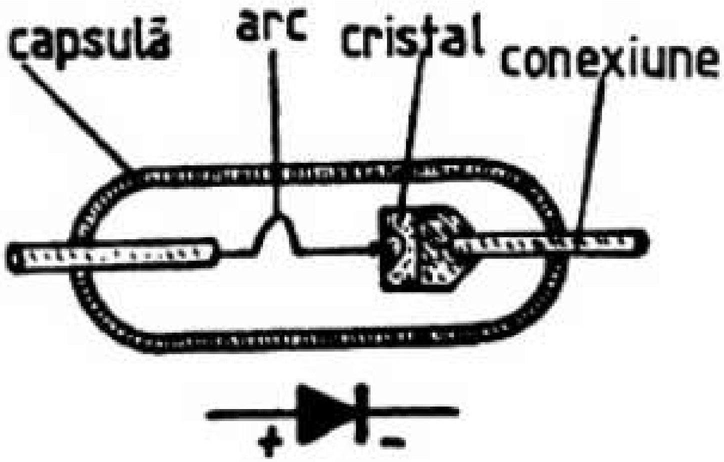


FIG. 2.9.

Dioda punctiformă cu germaniu

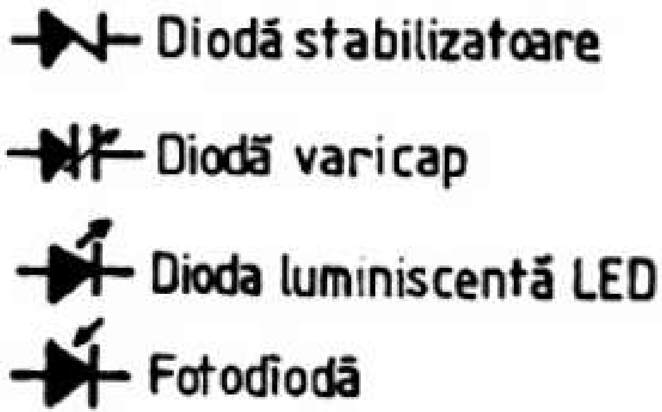


FIG. 2.10.

Tipuri de diode semiconductoare

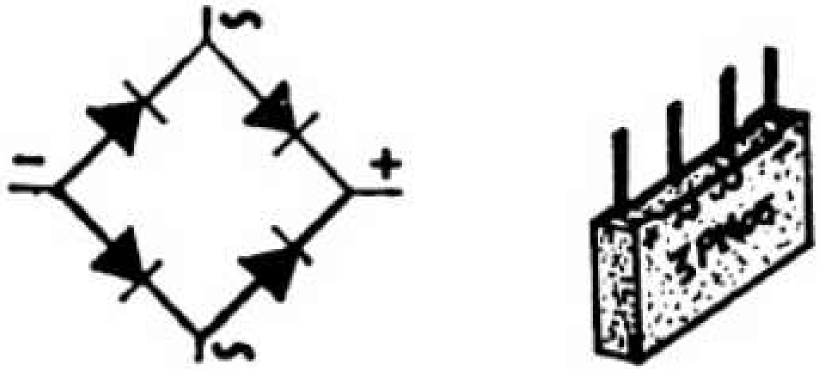
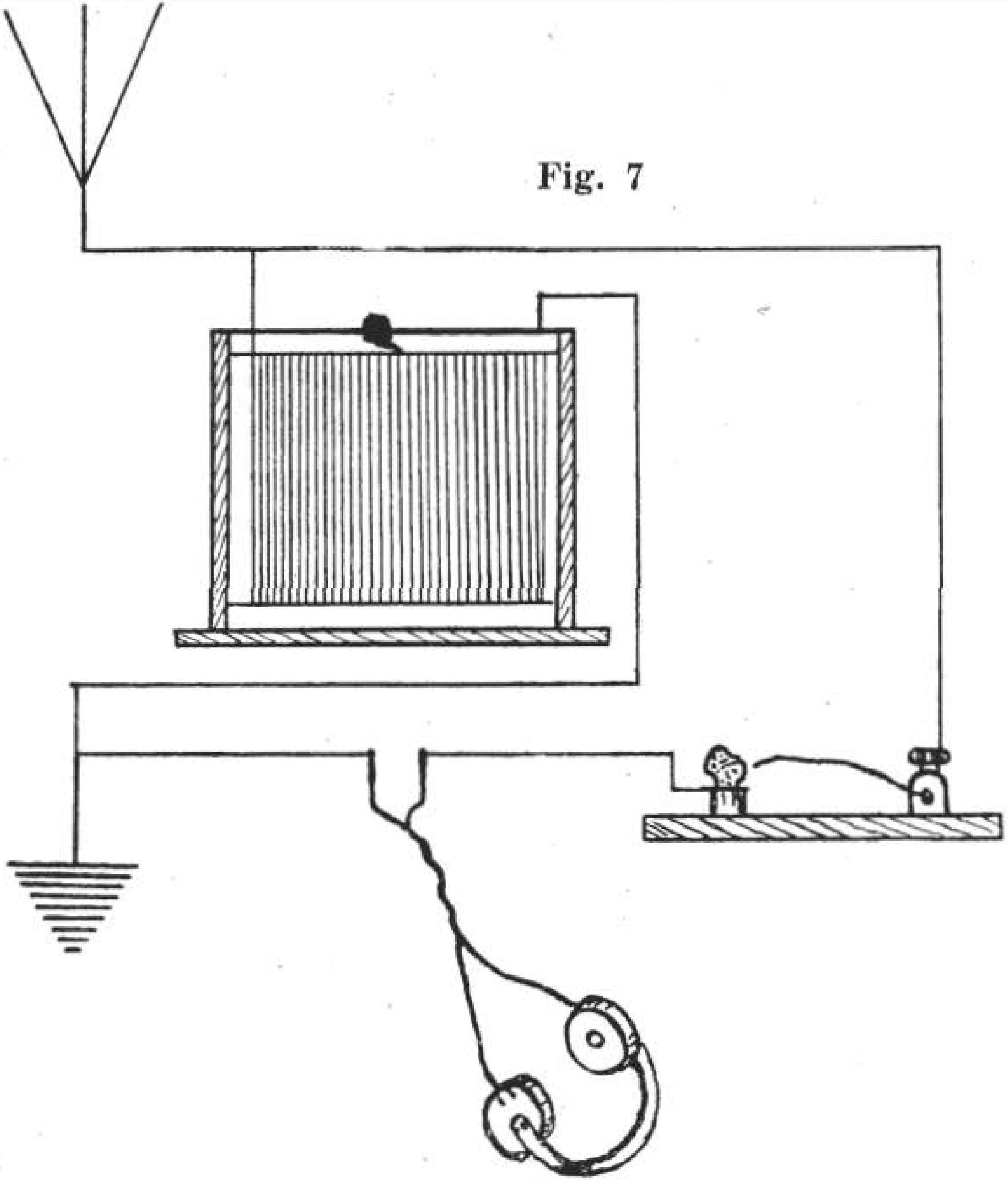
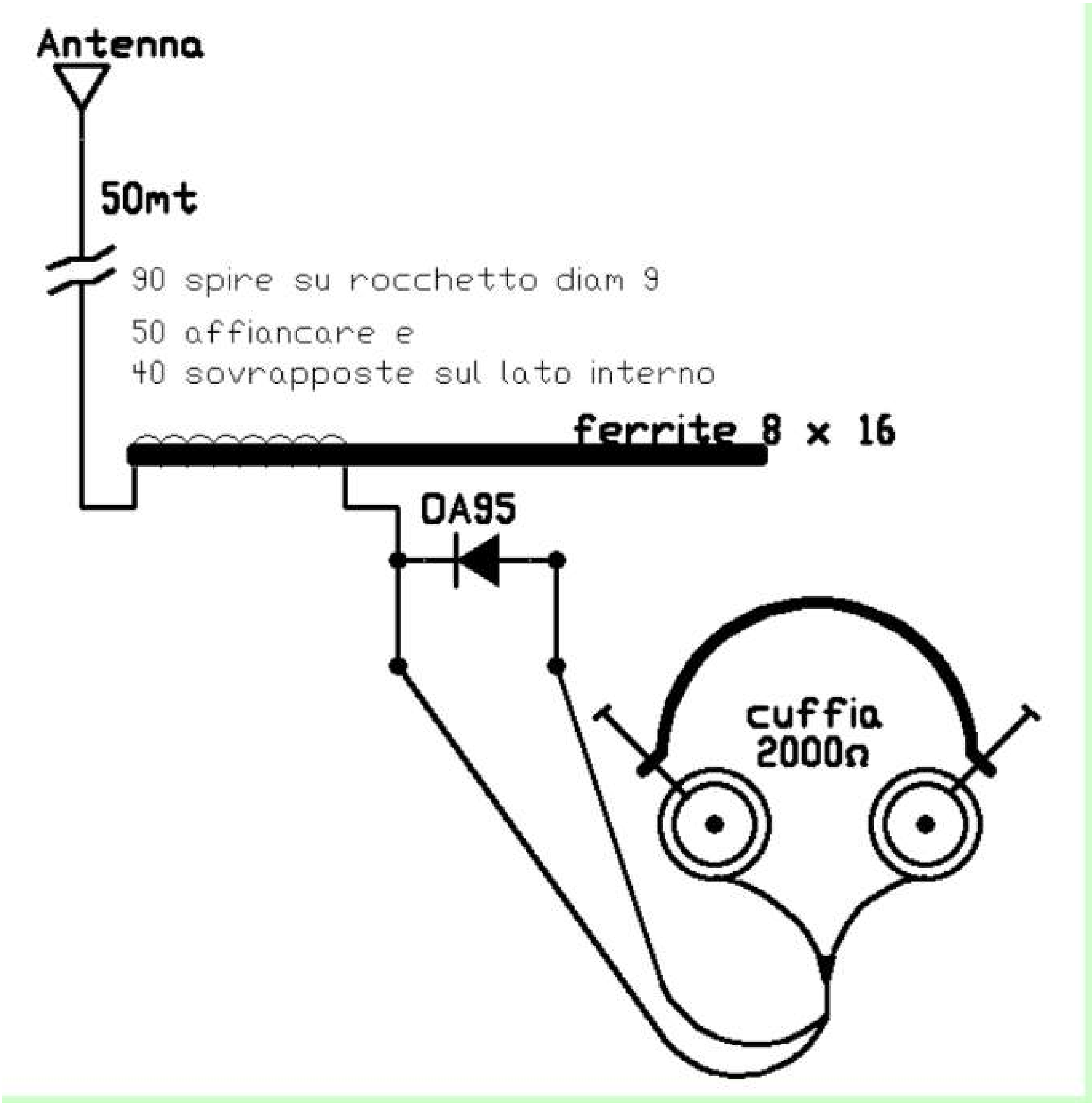


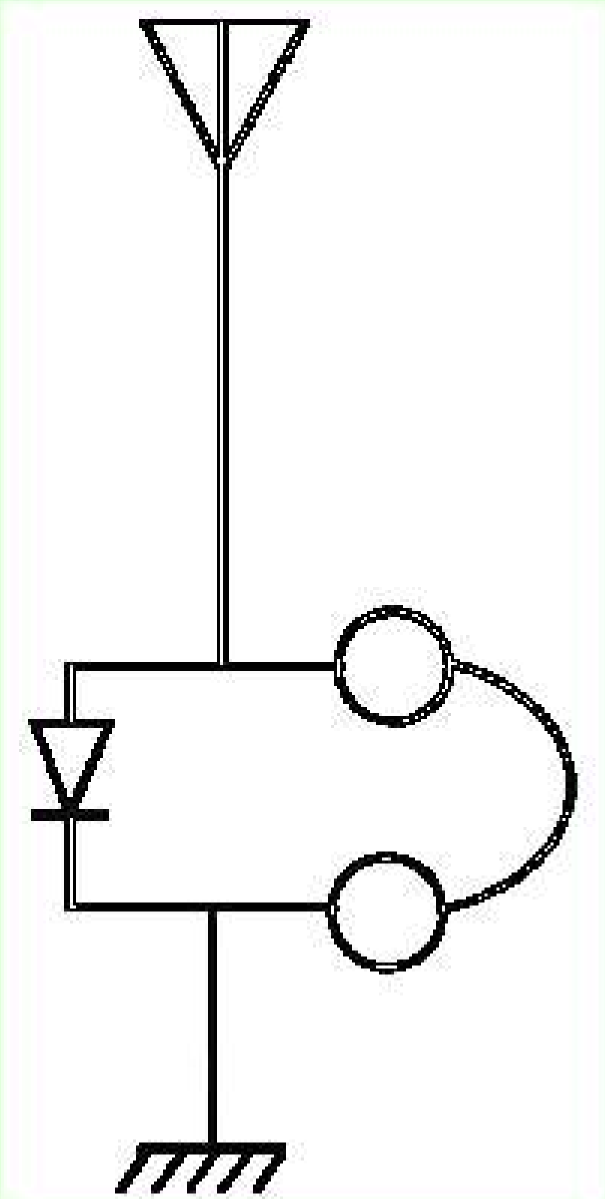
FIG. 2.11.

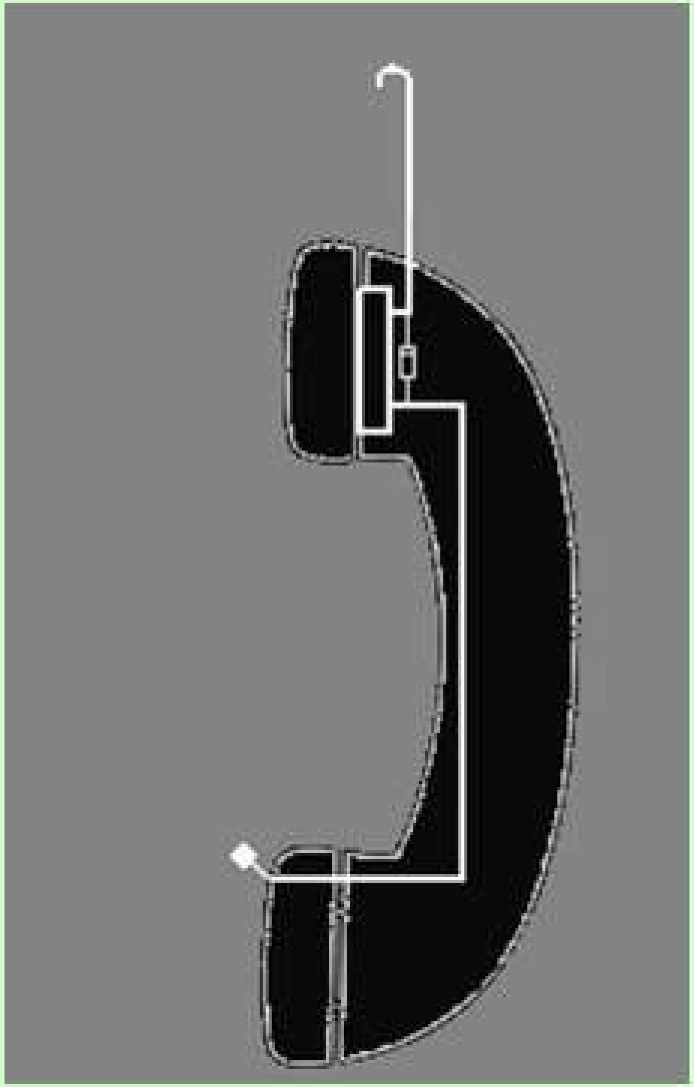
Puntea redresoare

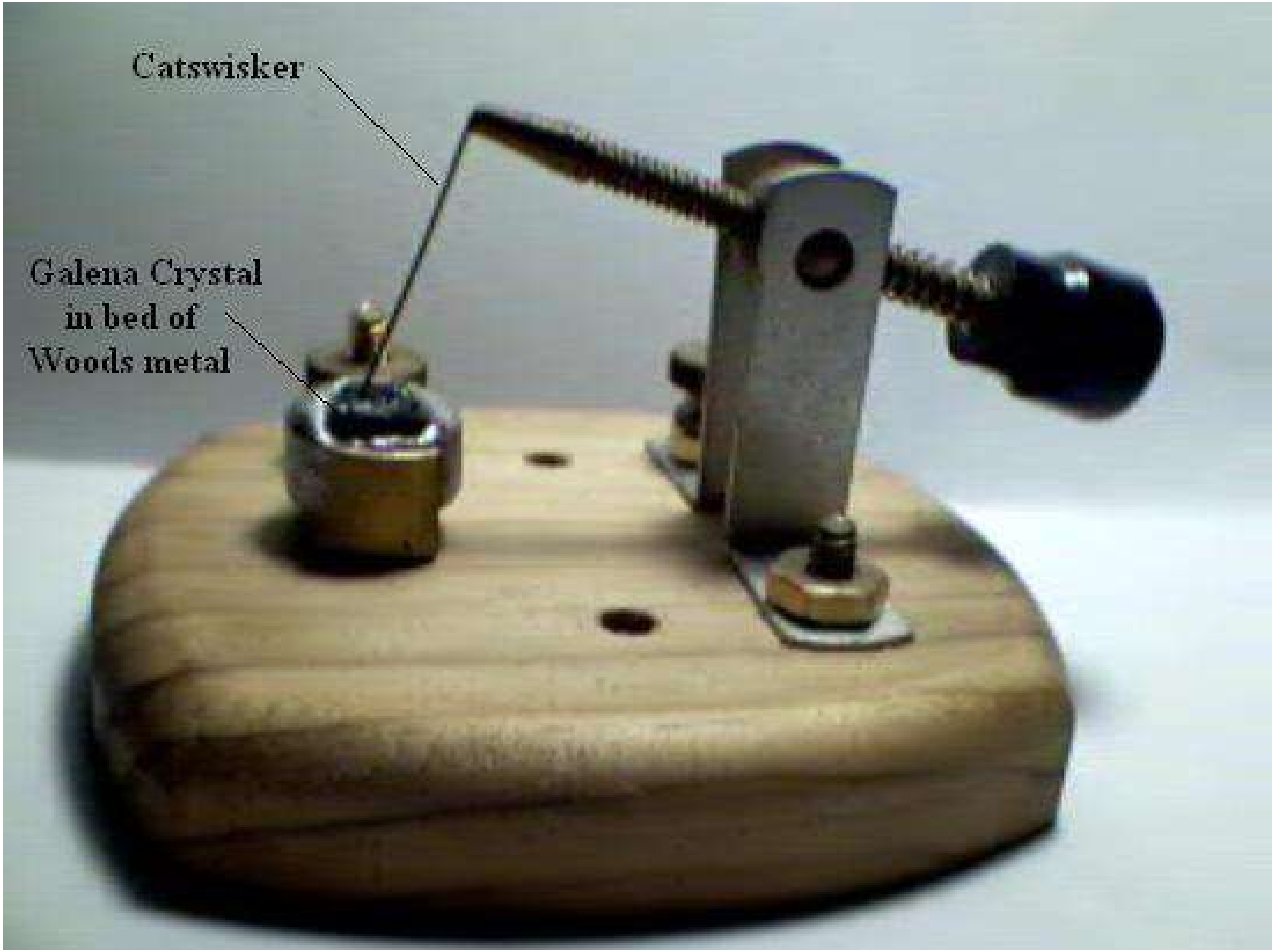
Fig. 7

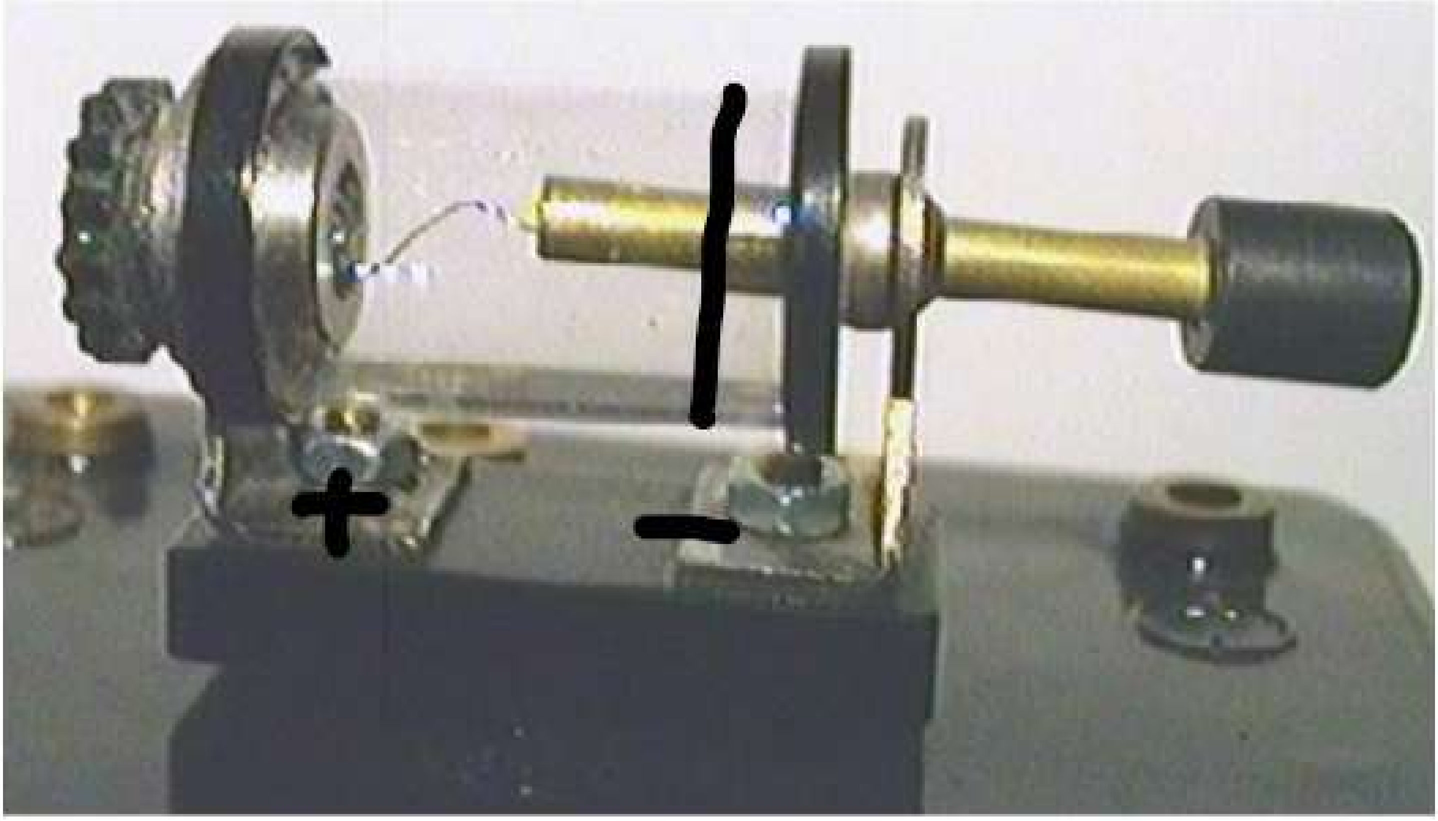


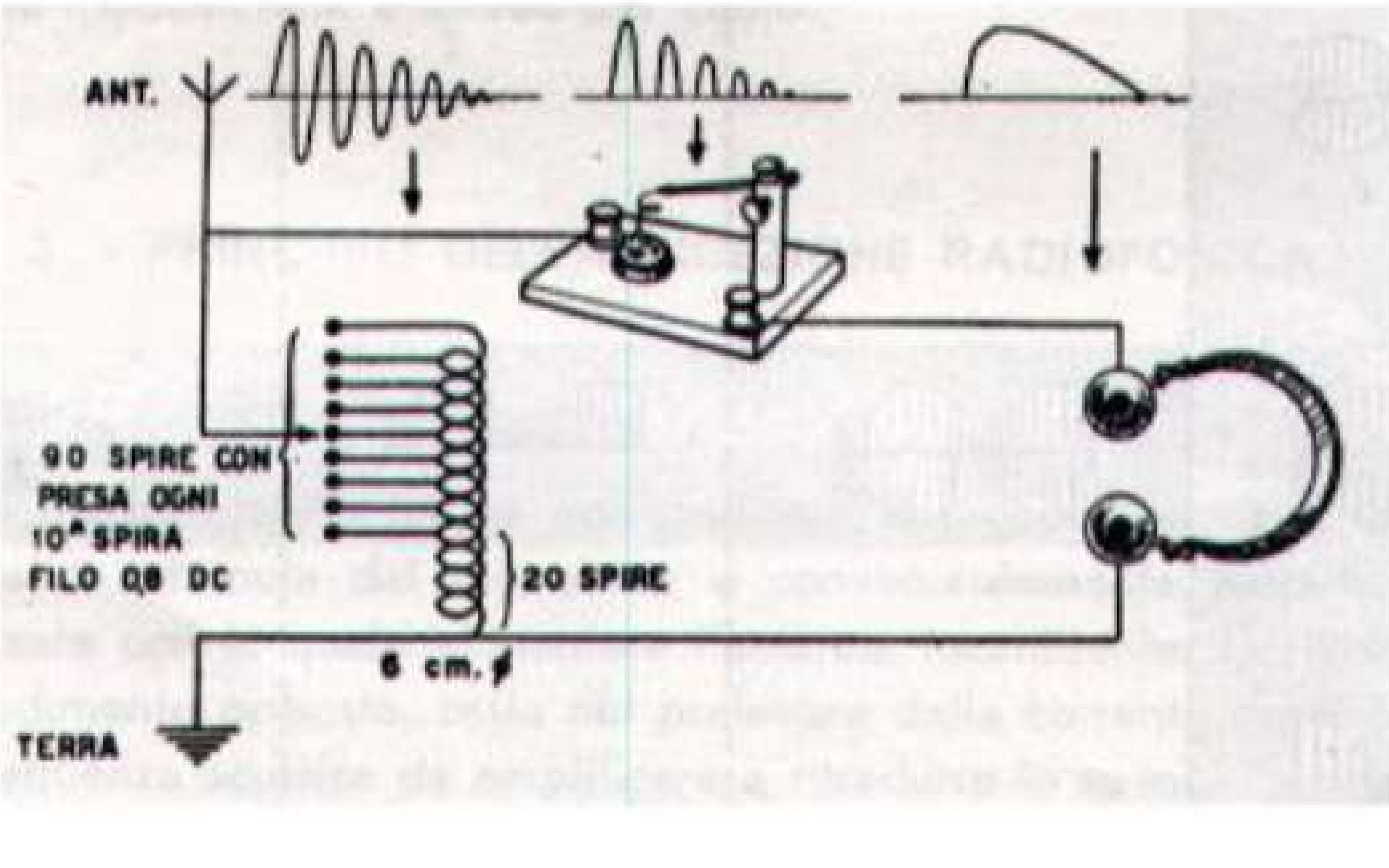

Antenna
50mt
90 spire su rocchetto diam 9
50 affiancare e
40 sovrapposte sul lato interno
ferrite 8 x 16
OA95
cuffia
2000Ω






Catswisker
Galena Crystal
in bed of
Woods metal


+
-


ANT.
90 SPIRE CON
PRESA OGNI
10^ SPIRA
FILO 0,8 DC
20 SPIRE
6 cm. ø
TERRA

Lead sulfide crystals, also called "galena"

Crystal detector, the lever was used to position the spring contact on a crystal face capable of performing the radio signal detection.

Yeah , but how does a galena radio work? Here is the constructive scheme of a receiver of this kind, obtained from a book of popular radio commu to the knowledge of the radio, ed.Hepep 1943):

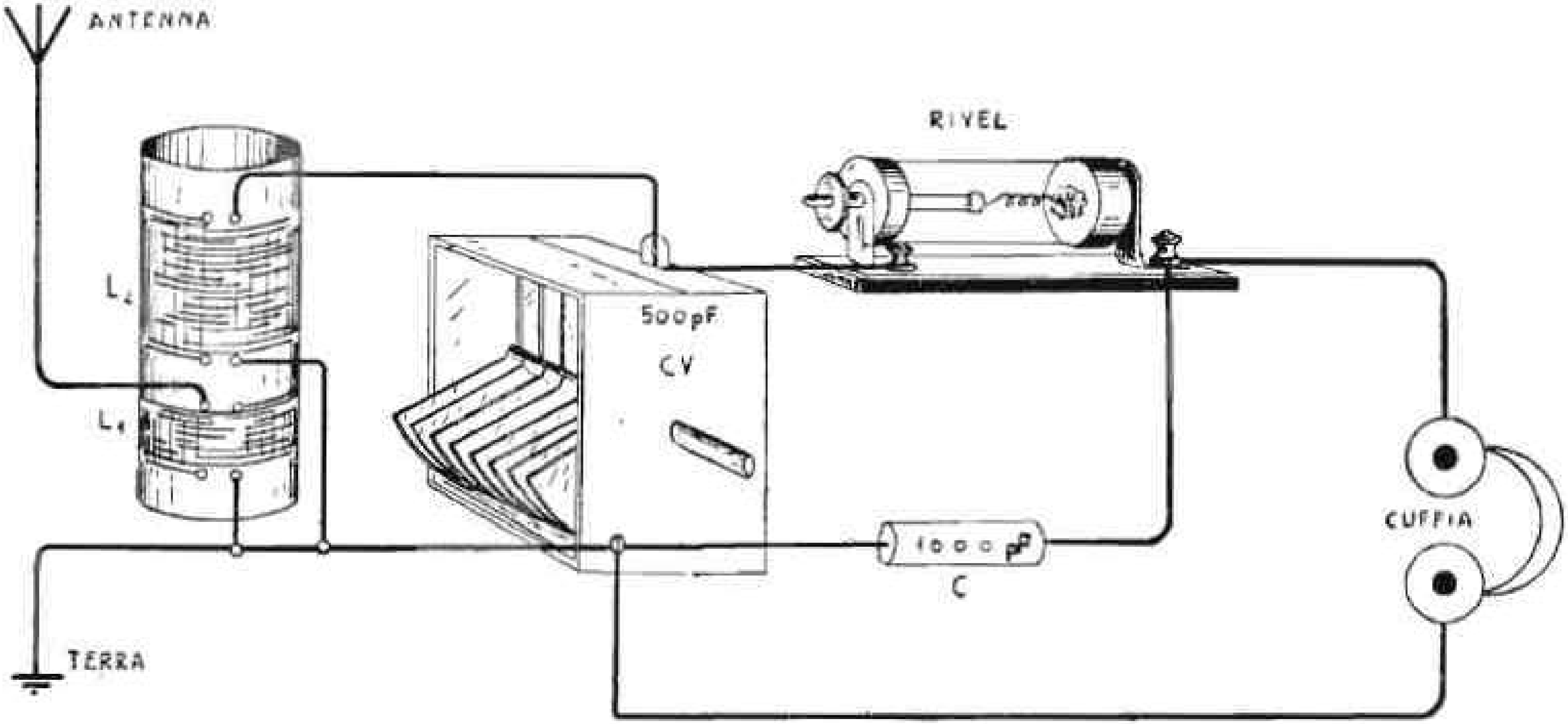
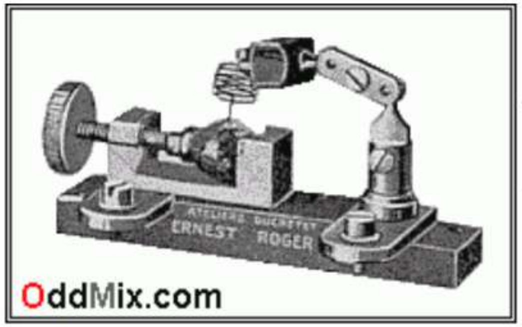


Fig. 13.5. - Realizzazione pratica dello schema di fig. 13.3 con aggiunta della bobina d'antenna.



Picture 1. "Ernest Roger" Crystal detector from 1920

Many of the **younger generation** never had the pleasure to have, or to even see a real beautiful crystal detector as shown on **Picture 1**. A detector like that was the product of the early 1920's, and it was an expensive, quality, well made product. They were usually hands assembled with machine made components.

This particular "**Ernest Roger**" detector device is built on an insulated base, either wood or most likely of Bakelite, the most widely used and only available plastic material at the times.

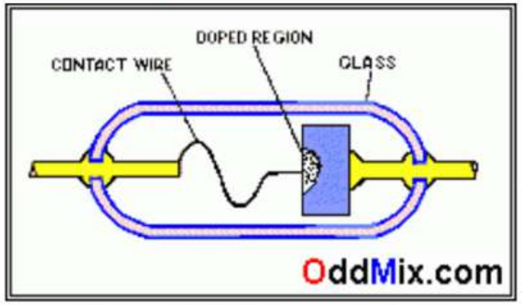
Many of the younger generation never had the pleasure to have, or to even see a real beautiful crystal detector as shown on **Picture 1**. The new generations are much too involved with technology and playing on their computers or going to an **online University**. This excellent detector holder used copper, brass and bronze generously for the crystal holder and for all of the **electrodes**.

The most often used crystal in this and similar detectors - then and now - was **pyrite** or galena as shown in the 1925 listing in a table in the **"American Mineralogist"** publication, that has a listing of thirty three minerals catalogued with rectifying detector properties.

Picture 2. Early point contact diode with adjustable srew

Among the very first commercially produced diodes is the 1N21B shown on **Picture 2**. It is more than curious, that this "diode" is enclosed in a case on which there is a slotted screw-head is just visible on the wide side (lower right). That screw is connected to a fine "cats whisker" steel wire, a few turns of a spring-like device, terminating in a point that is in touch of the germanium semiconductor material connected to the top left diode terminal.

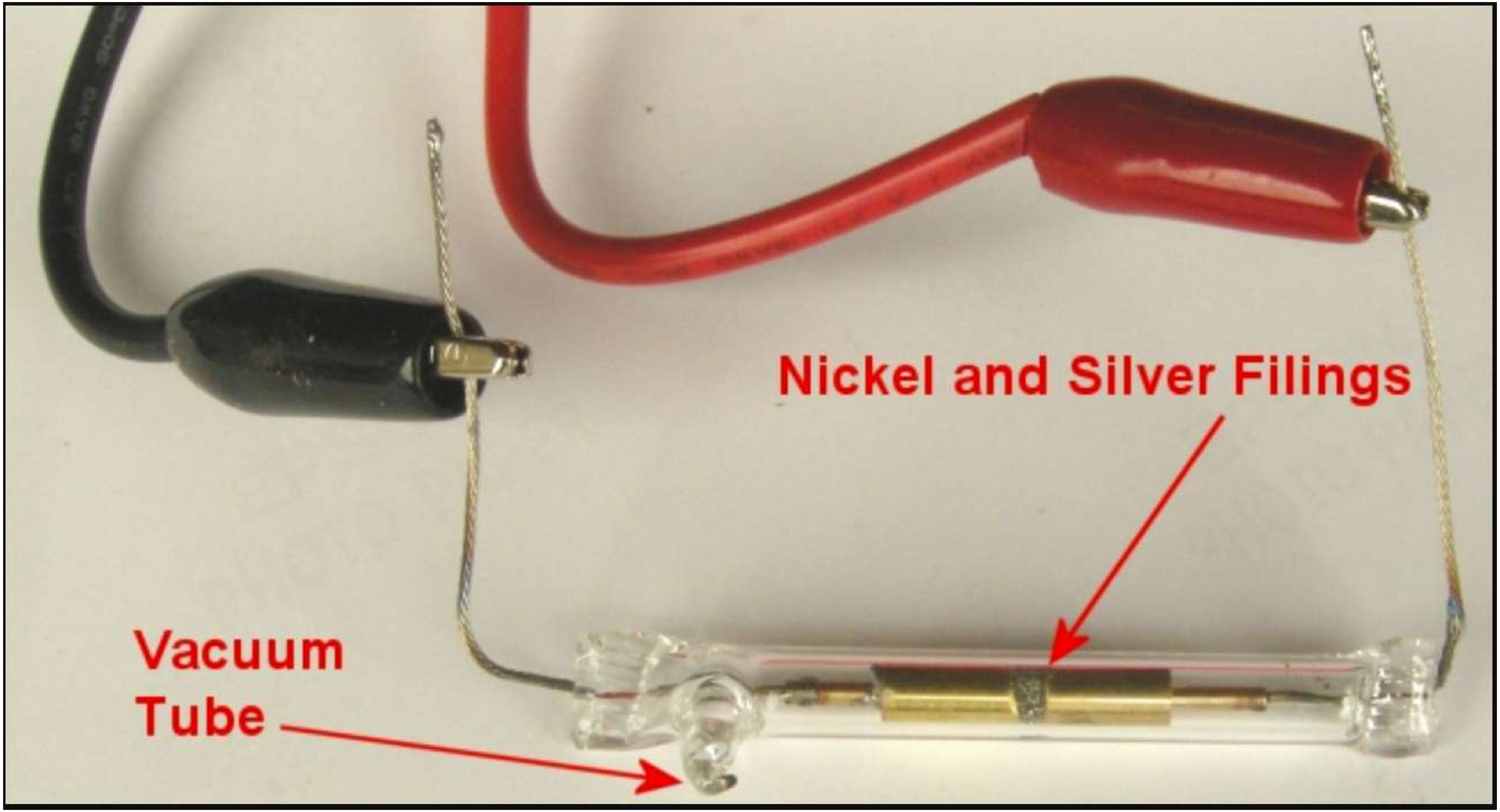
The arrangement is much smaller, and more diode like, then the detector on **Picture 1**., but it made in a very similar arrangement, which has became known as the point contact diode. From these and similar germanium diodes, evolutionary progress leads us to current PN junction Silicon, Gallium Arsenide or other more exotic semiconductor materials which are the achievement of the latest scientific age and many years of steady experimentation, research and development.



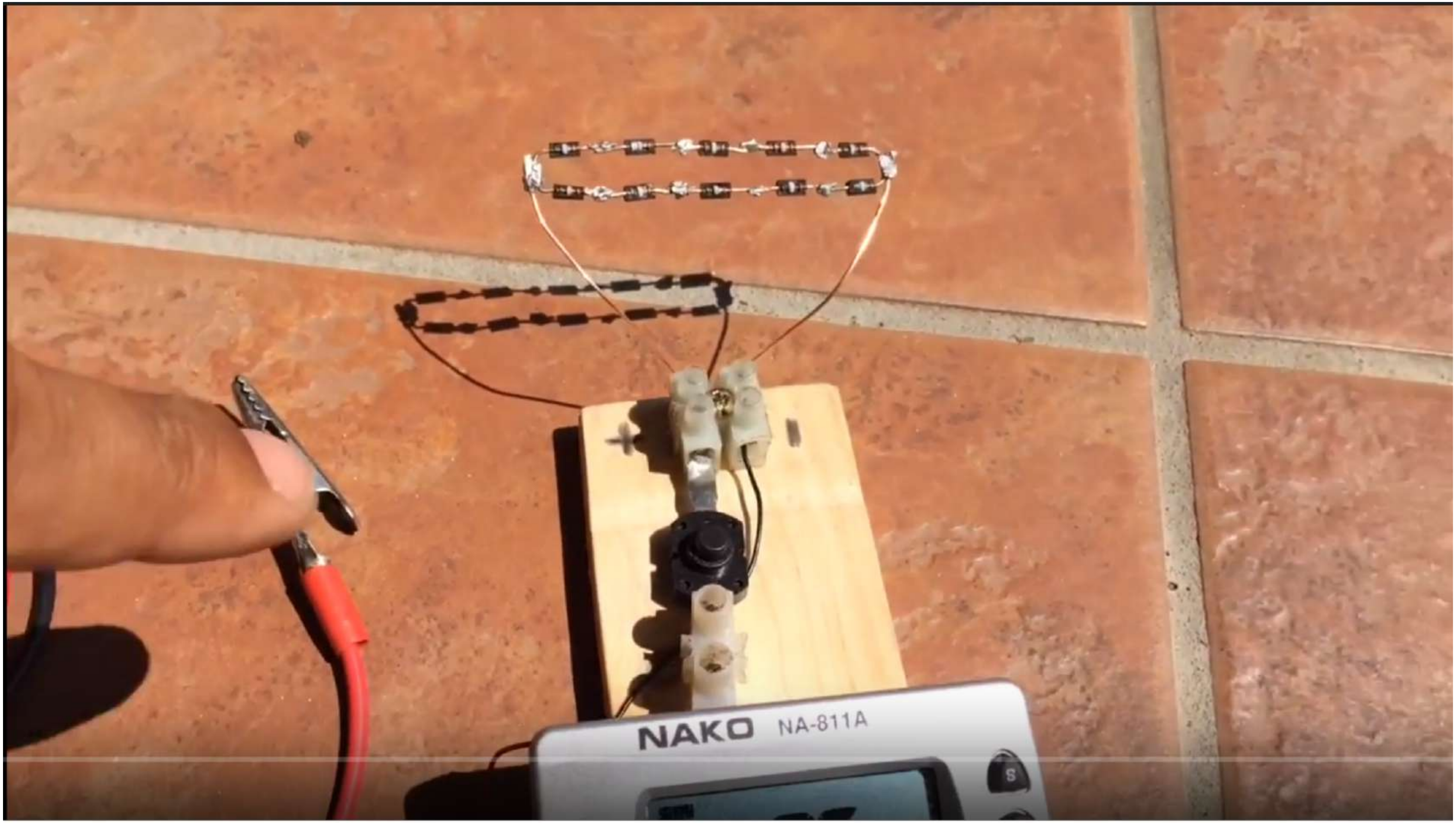
Picture 3. Point contact diode

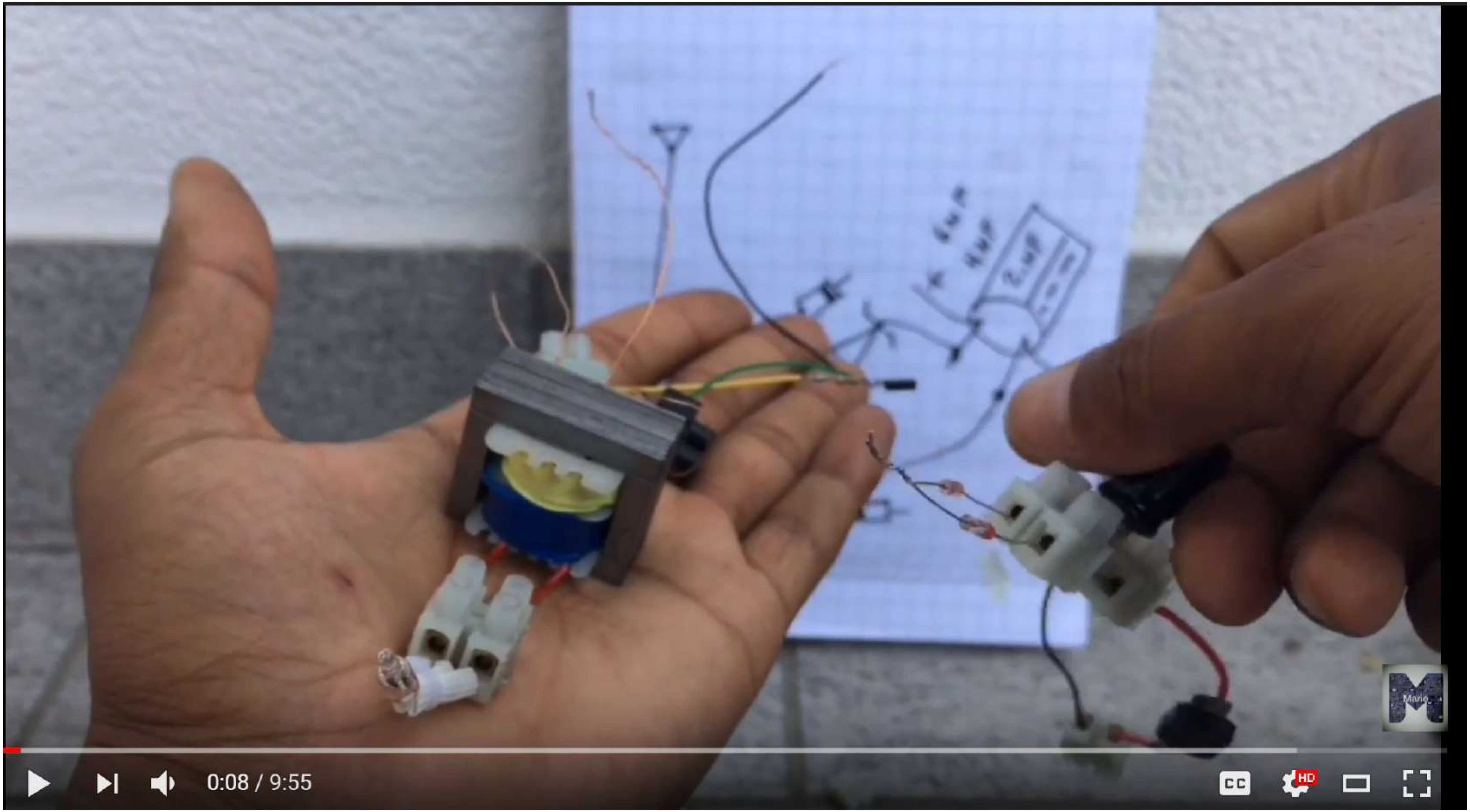
Picture 3 shows the cross section of a hermetically glass enclosed, point contact diode. If the left side, point contact terminal would be attached to a screw and a short spring, and the glass envelope would have a threaded metal part in it, the **Picture 2** and **Picture 3** devices would be nearly identical.

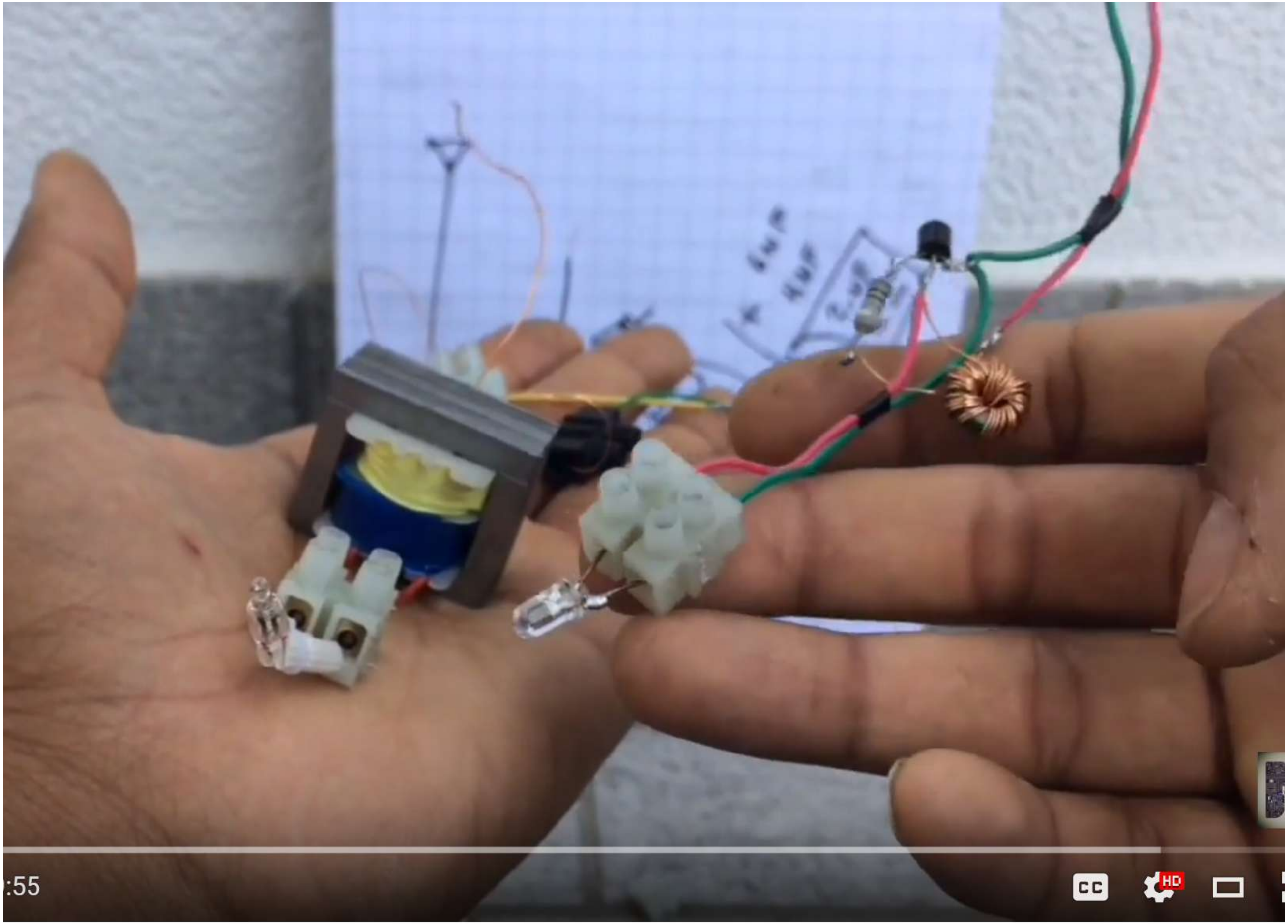
These point contact "cat's whisker" devices, are still made occasionally because of their very small capacitance. As it was discovered early on, they are highly useful in high frequency electronics. All the way up to microwave frequencies they useable. The simplest radar detectors usually made with a simple horn **antenna**, a diode similar to **Picture 2** and **Picture 3** and a transistor amplifier. If the designer keeps it simple, and don't use a local oscillator, such radar detectors

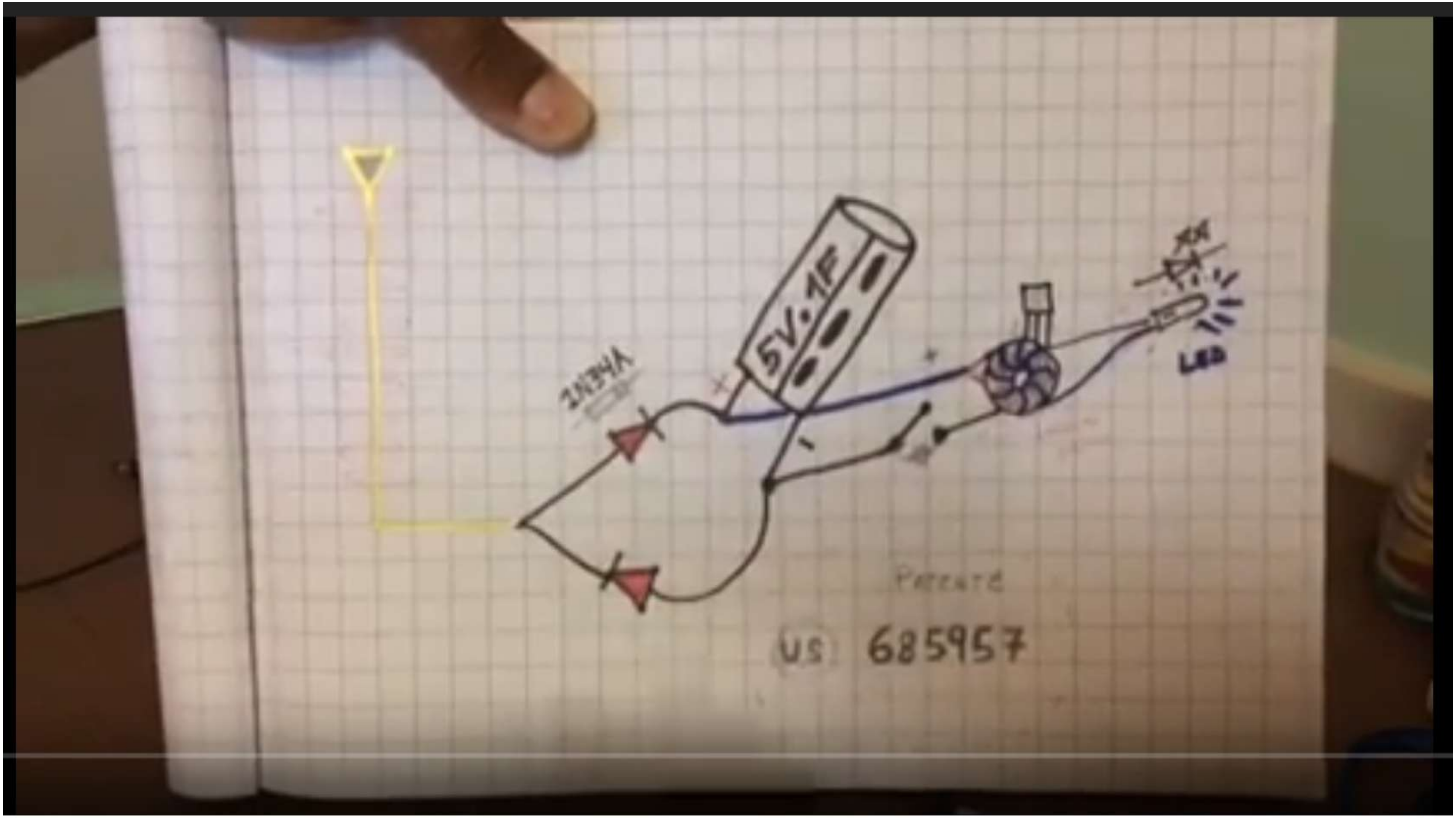

Nickel and Silver Filings
Vacuum
Tube

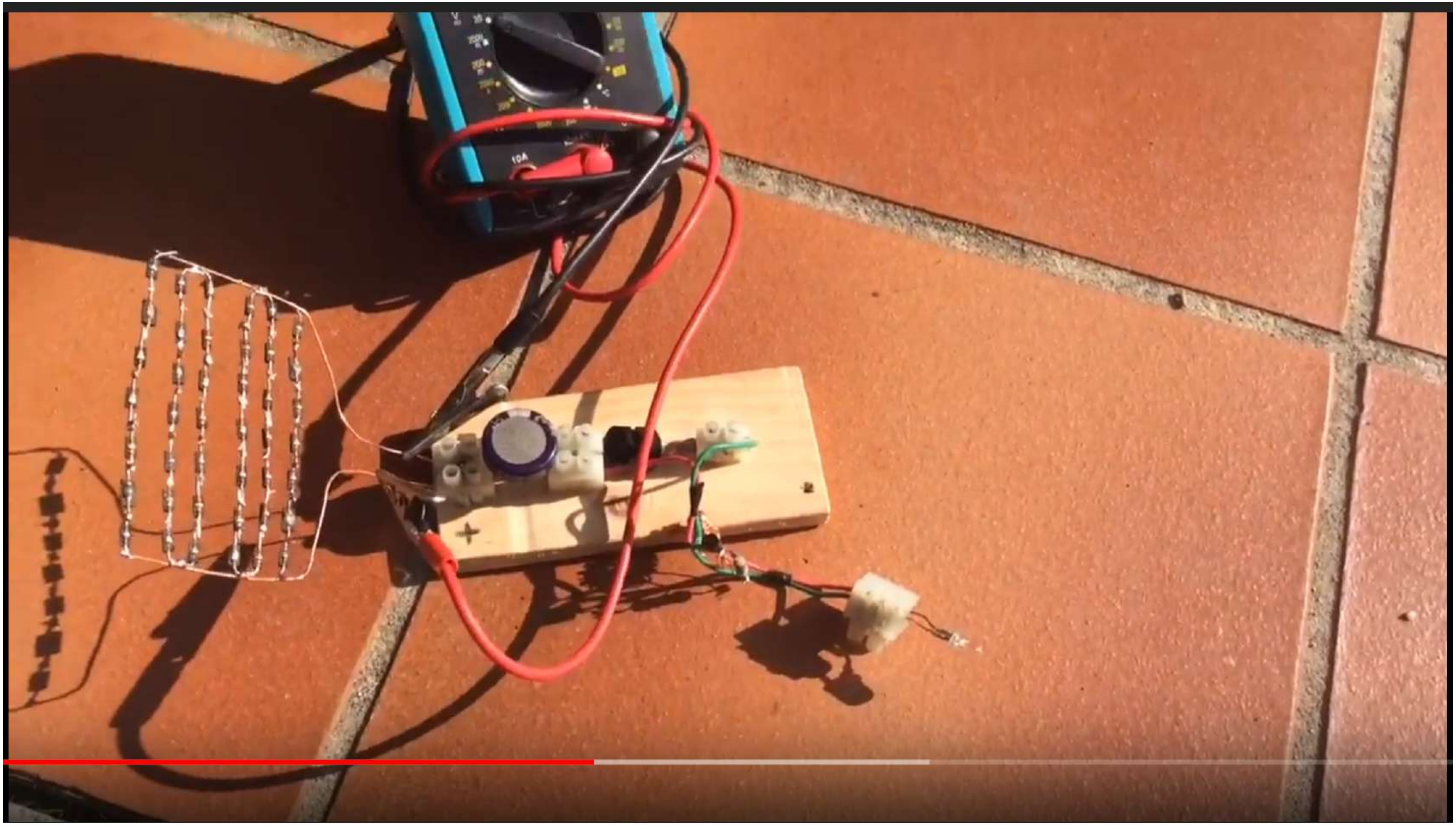

Meter on 200 Ohm Range
Display Indicates Activation = 11.2 Ohms
Coherer Detector
Press to Spark
Spark Gap
11.2
DCV
ACV
DCA
OFF ON
CEN-TECH
DIGITAL
MULTIMETER

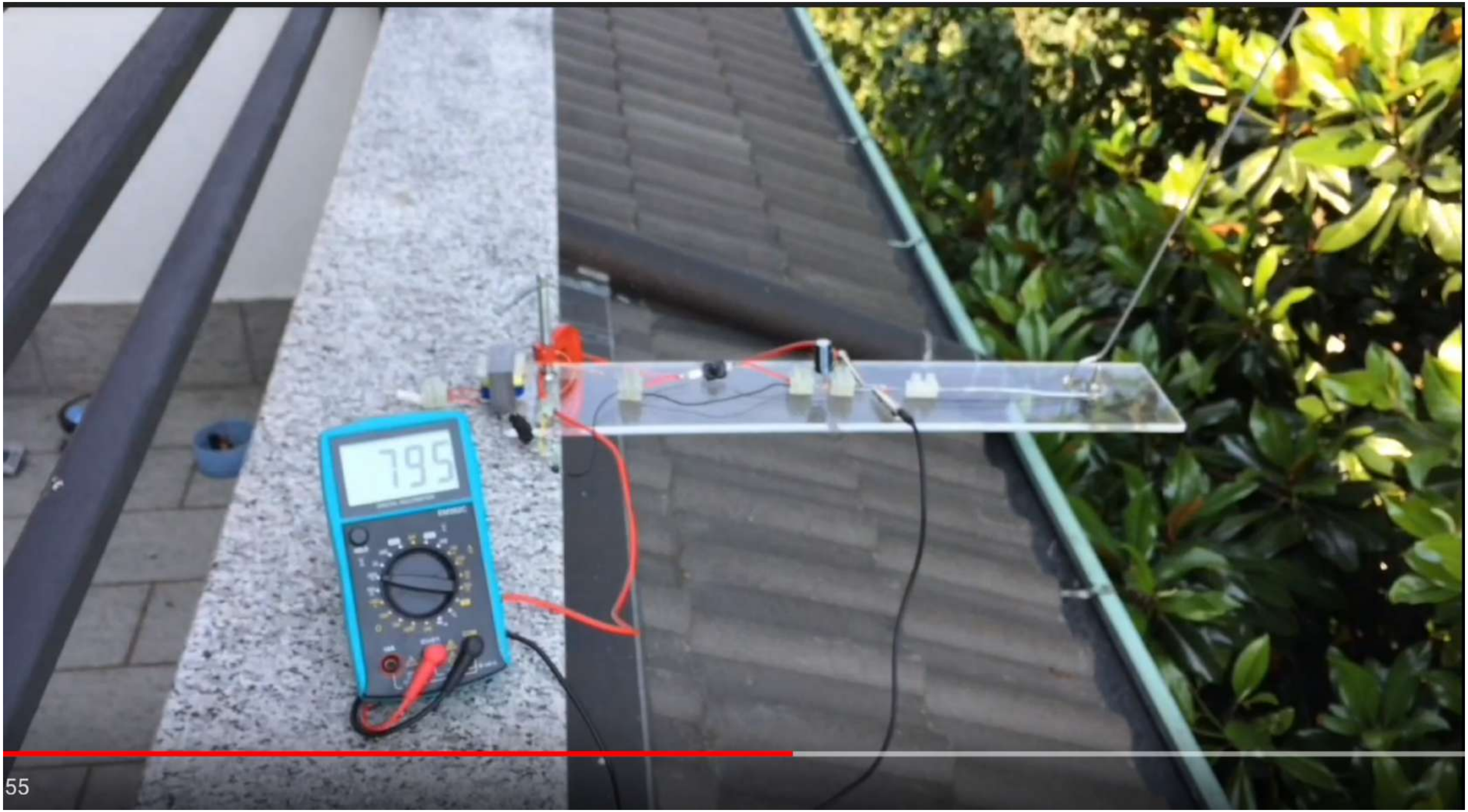

NAKO
NA-811A

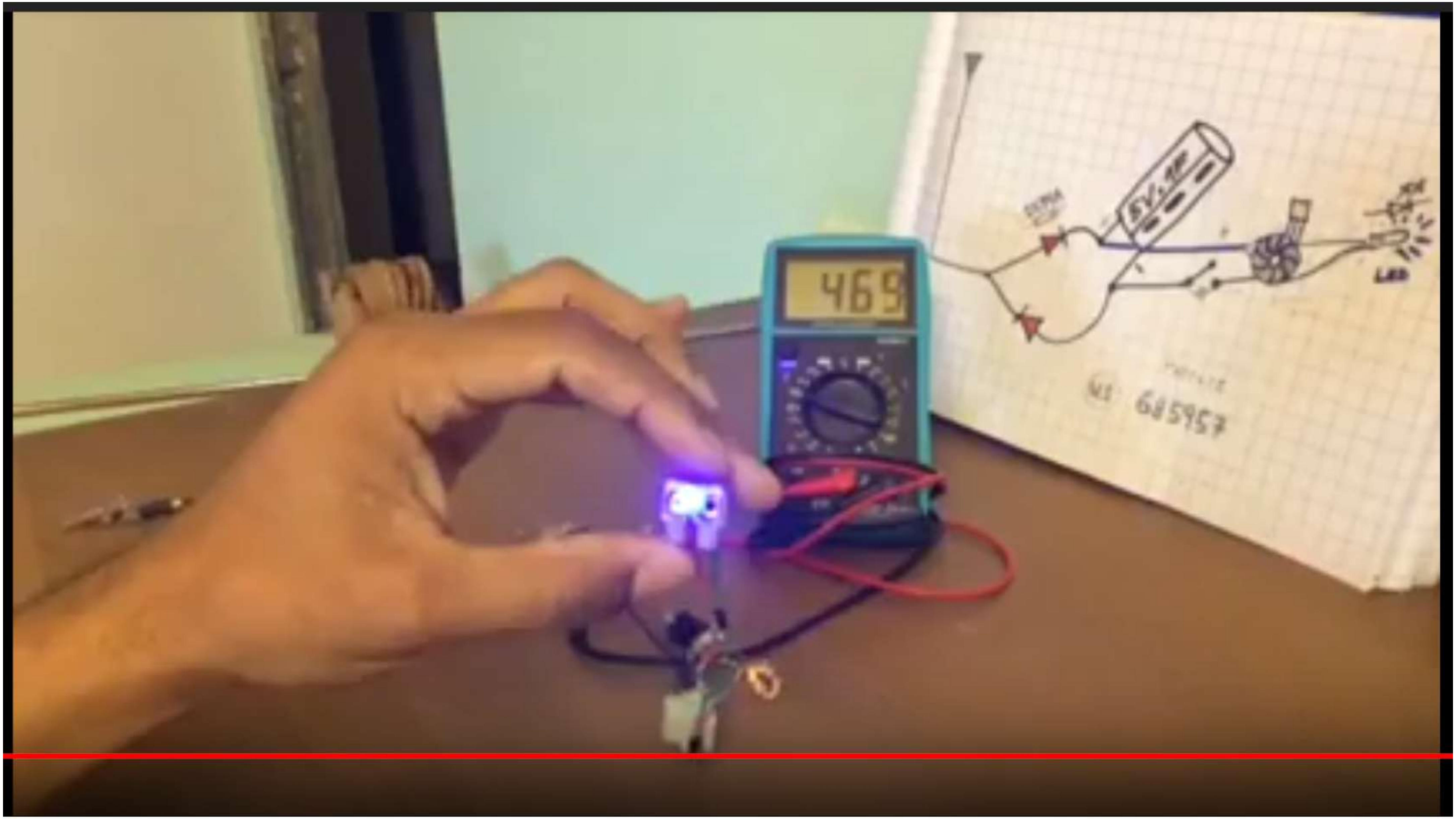

0:08 / 9:55



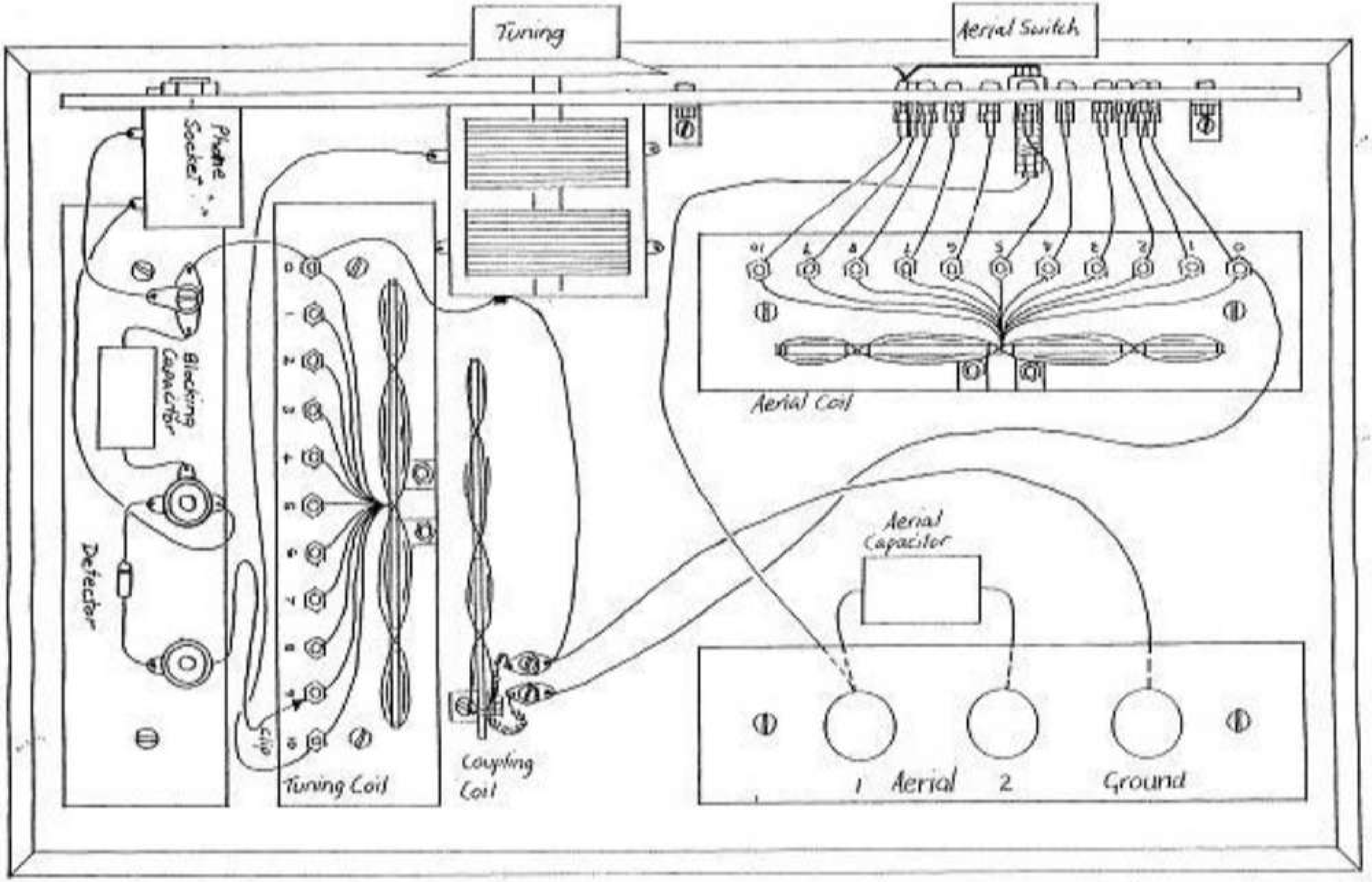

1N34A
5V.1F
+
-
LED
Patent
US 685957


10A


795
55

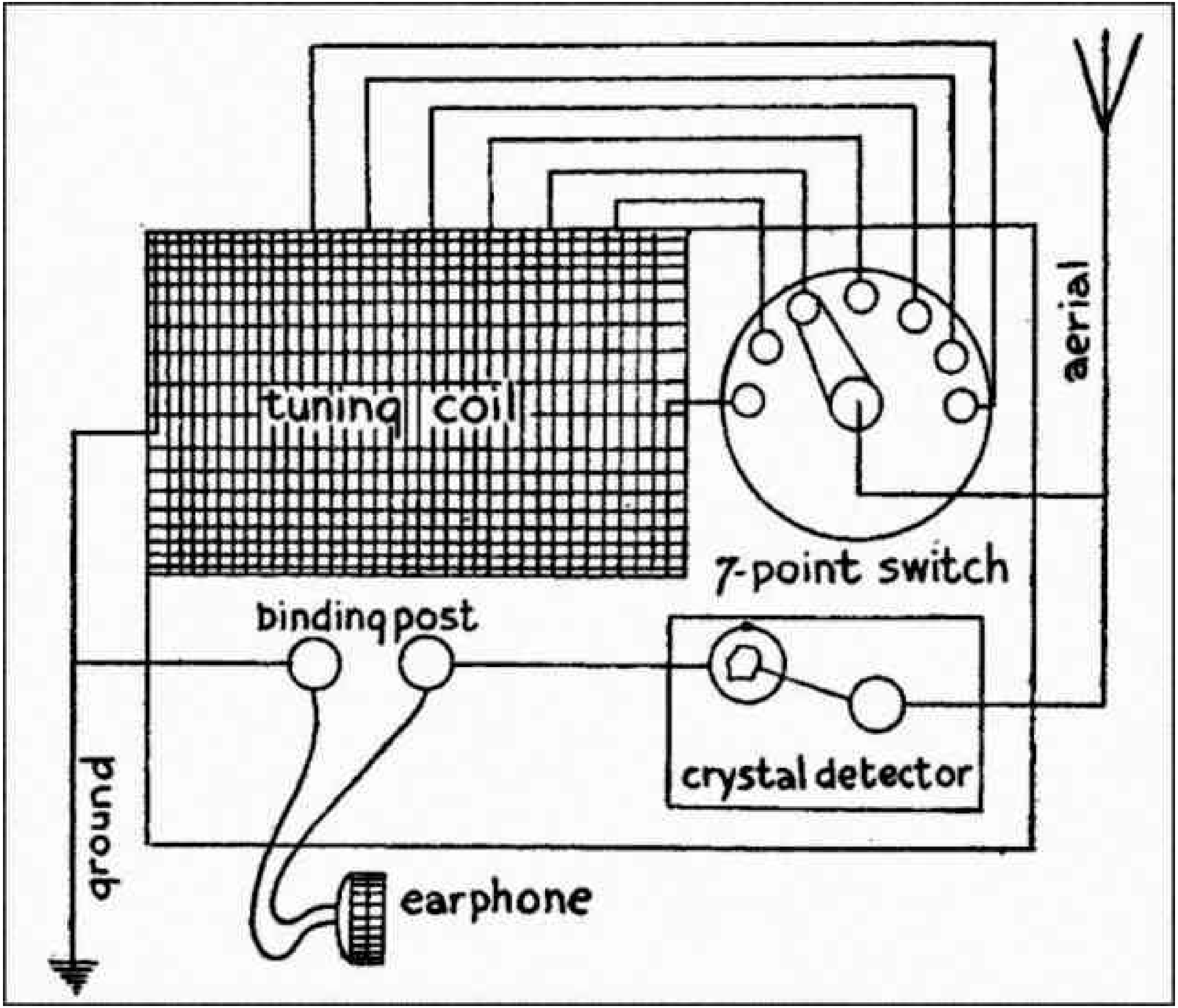

469


THE
SUPER
CRYSTAL
SET
AERIAL TAP
TUNING
PHONES



Tuning
Aerial Switch
Phone Socket
Blocking Capacitor
Detector
Clip
Tuning Coil
Coupling Coil
Aerial Coil
Aerial Capacitor
1 Aerial 2
Ground


KB8TAD


tuning coil
7-point switch
aerial
binding post
crystal detector
ground
earphone

KB8TAD

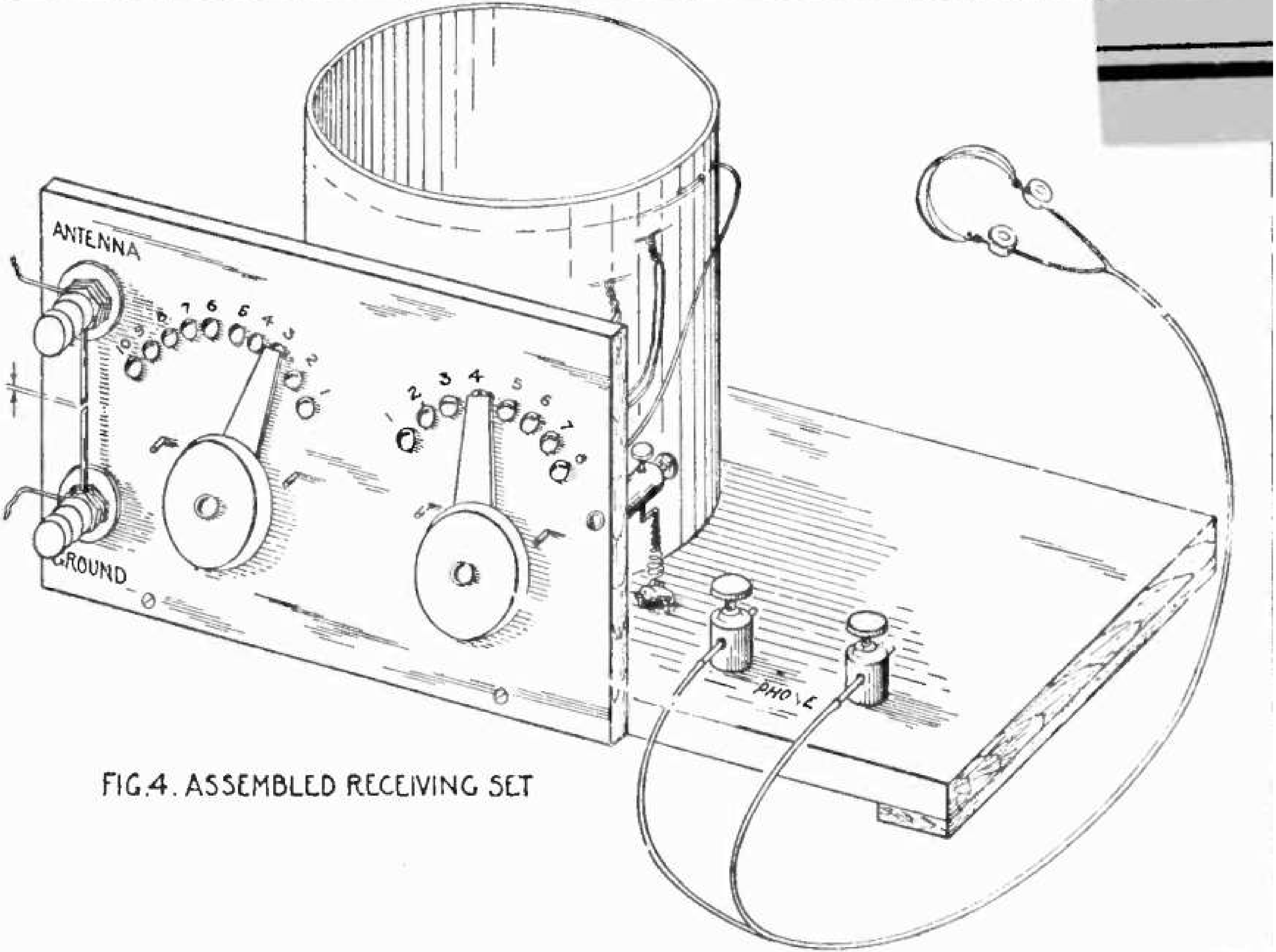


FIG. 4. ASSEMBLED RECEIVING SET

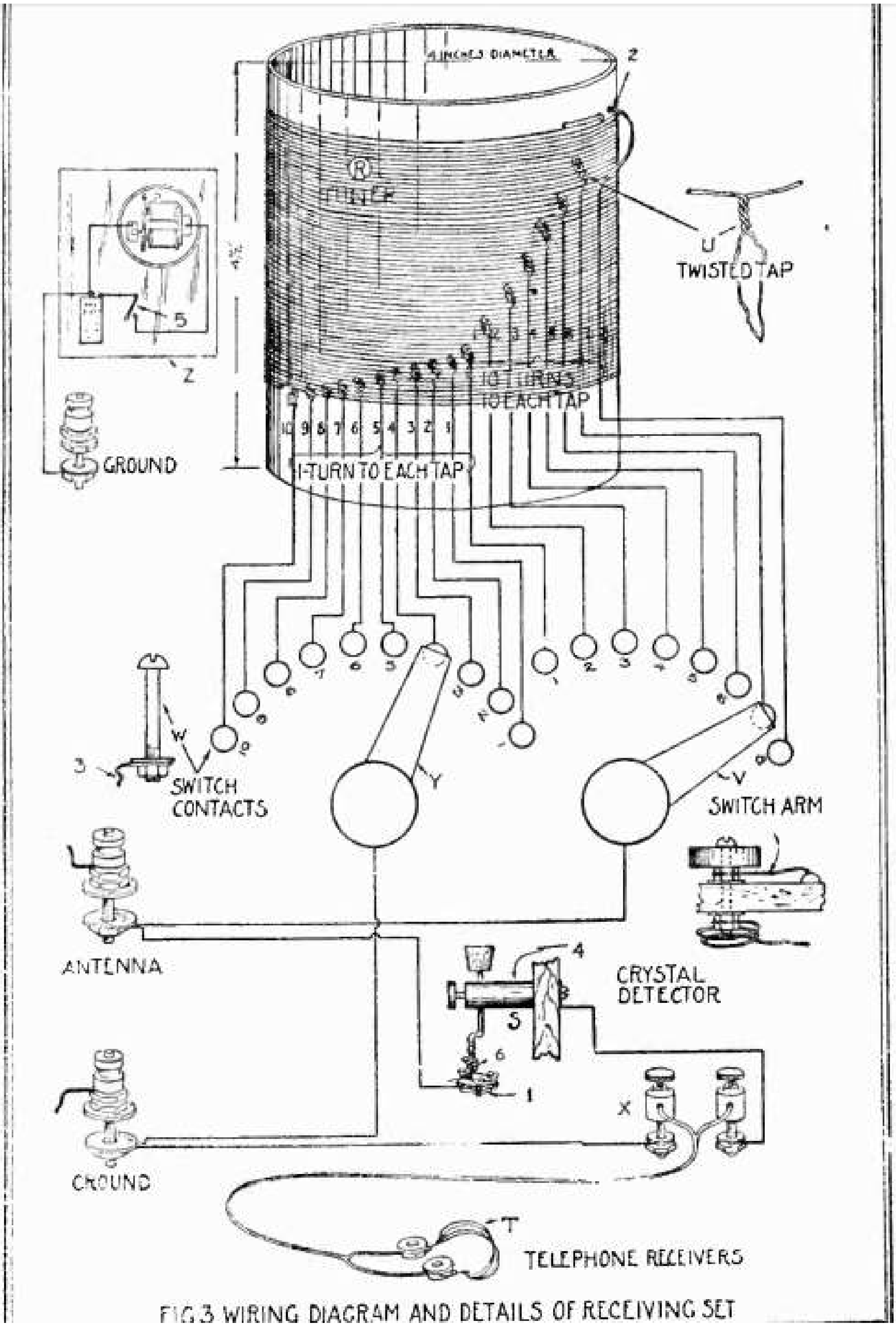
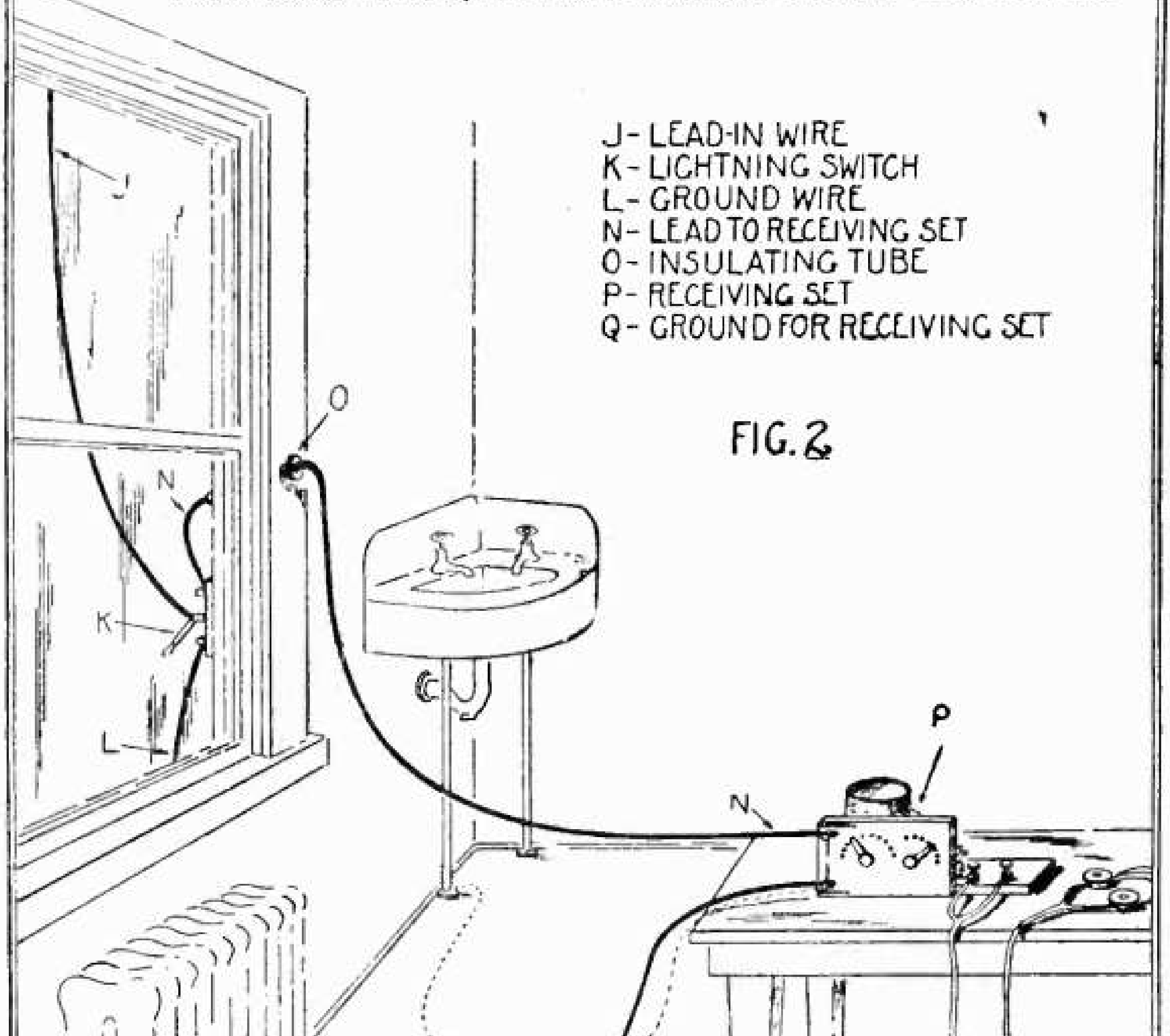


FIG.3 WIRING DIAGRAM AND DETAILS OF RECEIVING SET

FIG 2. RECEIVING SET, WITH ANTENNA AND GROUND CONNECTIONS



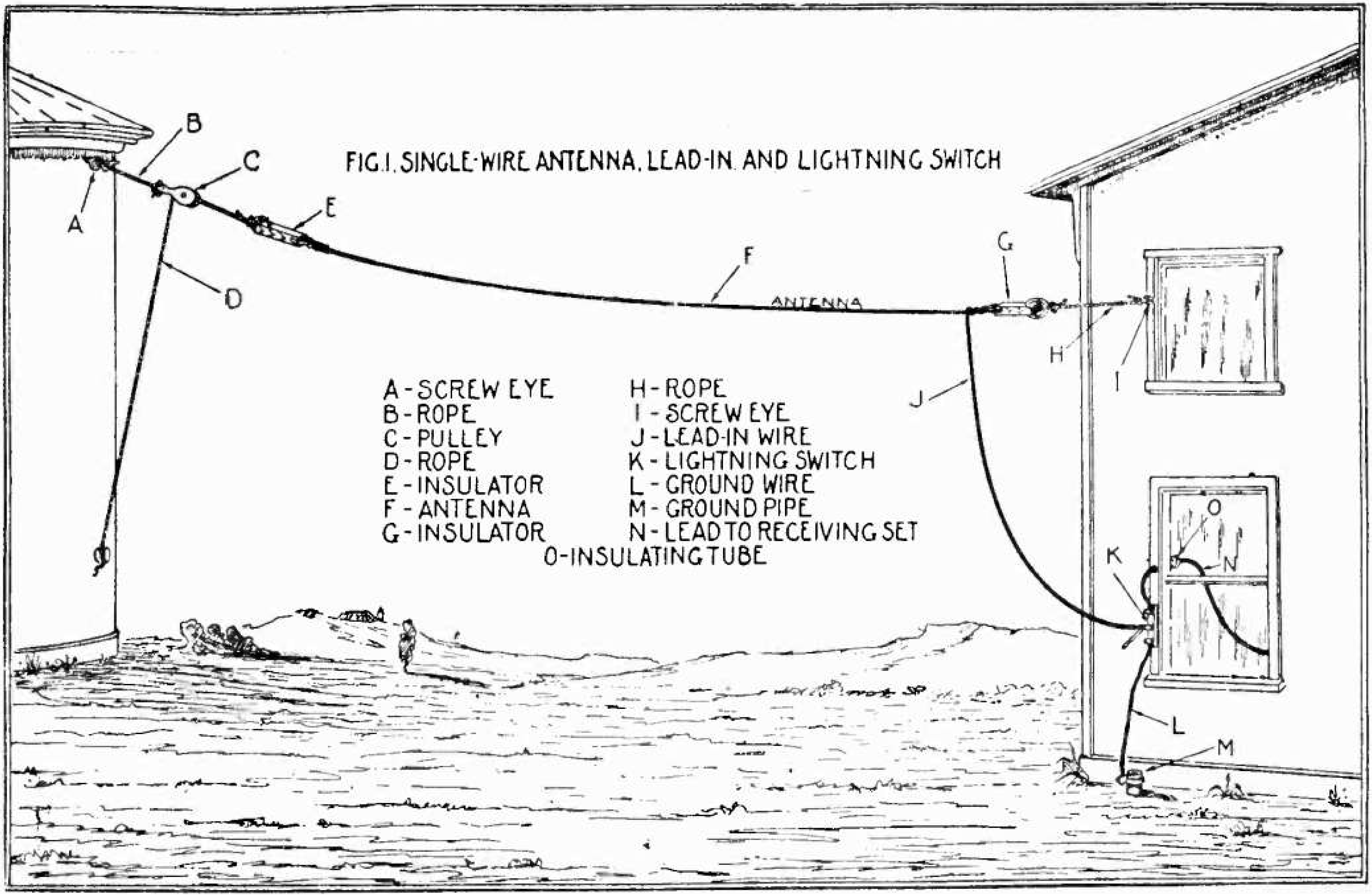


FIG. I. SINGLE-WIRE ANTENNA, LEAD-IN AND LIGHTNING SWITCH
A
B
C
D
E
F
ANTENNA
G
H
I
J
K
L
M
N
O
A - SCREW EYE
B - ROPE
C - PULLEY
D - ROPE
E - INSULATOR
F - ANTENNA
G - INSULATOR
H - ROPE
I - SCREW EYE
J - LEAD-IN WIRE
K - LIGHTNING SWITCH
L - GROUND WIRE
M - GROUND PIPE
N - LEAD TO RECEIVING SET
O - INSULATING TUBE

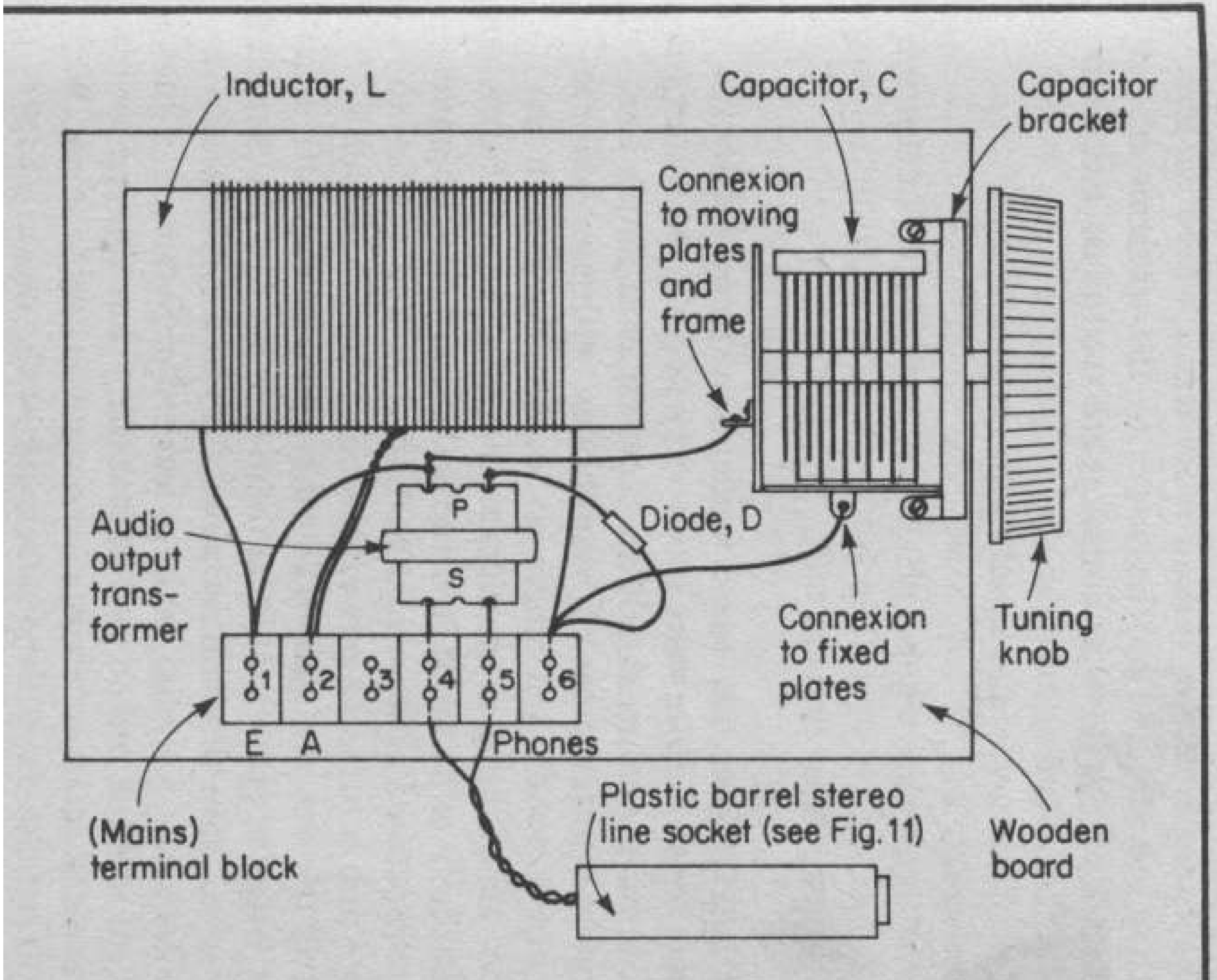
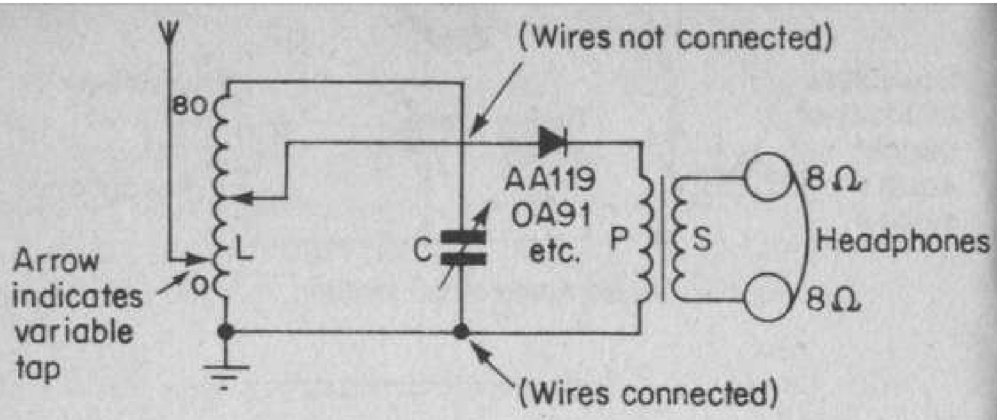
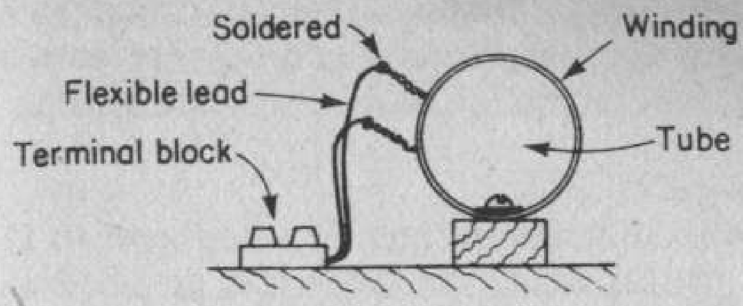


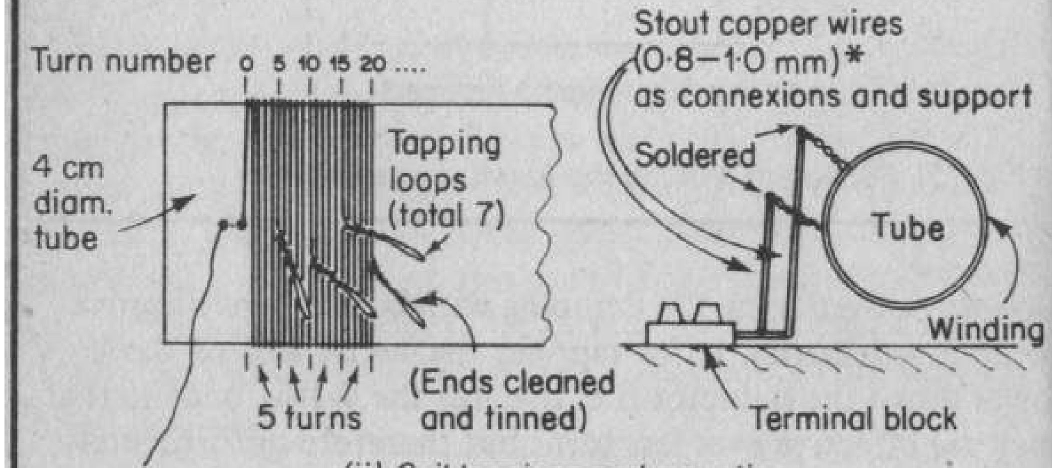
Fig. 14 Suggested component arrangement for elementary crystal set



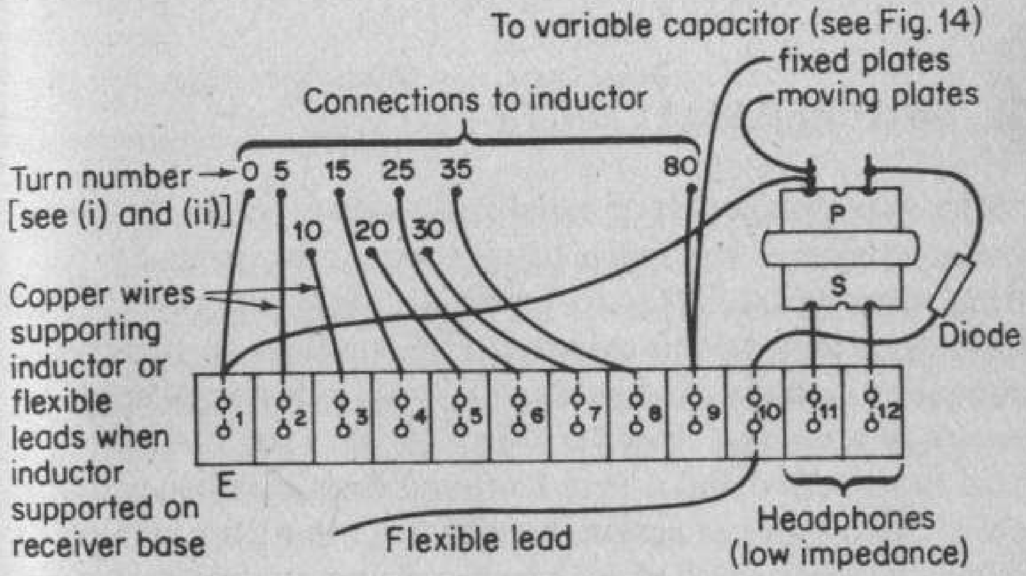
(i) Circuit



(iii) Alternative mounting



(ii) Coil tappings and mounting



(iv) Suggested component arrangement

Fig. 16 Circuit with tapped inductor

* 21–19 SWG, 20–18 AWG

required) and a *flying lead* for the diode, these components are shown in Fig.16(iv). This is doing the job properly, there is no reason however (except for unreliability of contact) why both aerial and diode flying leads should not terminate on *crocodile clips* and be clipped onto the chosen taps as required.

Earth is connected to terminal 1 and the headphones to 11 and 12. Both the aerial and the diode lead are tried at terminals 2 – 9, a game of "poke and hope" but one which can be rewarding. Remember that generally but not always, the tappings with the lower numbers reduce loudness but increase selectivity. Aerial to terminal 8, diode to 9 brings us back to Fig.13(i) of course.

5.2 SWITCHED SELECTIVITY

A technique of selection of aerial and diode tappings by means of rotary switches has much to recommend it especially if setting changes are likely to be needed for reception of different stations. In this case two single-pole 8-way switches are required, usually obtainable as 12-way so leaving 4 spare. The drawing symbol shown in Fig.17 speaks for itself with regard to its action and it may be found from catalogues that there are two types of *action*, by which is meant the manner in which the switch changes over from one contact to the adjoining one. *Break before make* switches disconnect one circuit before the next is connected and *make before break* have a change-over period during which both circuits are connected at once for a short time. Either type is suitable for us. A knob to rotate each switch is also required, a small one, say 2 cm diameter or less is ample, if with an indicator line or pointer, so much the better. The modifications to Fig.16 for switching are given in Fig.17.

With such rotary switches a search for the optimum arrange-

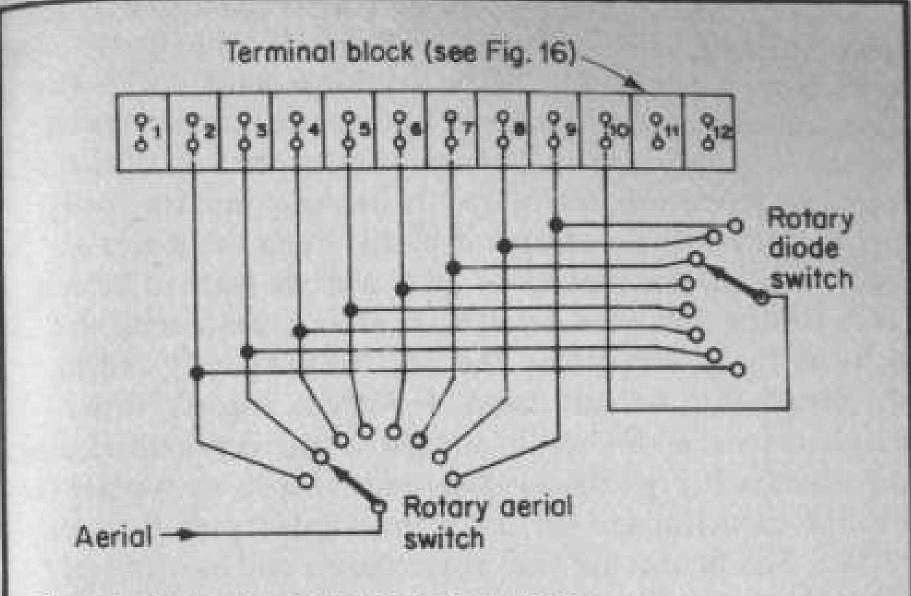


Fig. 17 · Switching aerial and diode leads

variable capacitor, the two switches and the headphone socket, the latter must then be of the chassis type. A pair of terminals for aerial and earth completes the receiver. On the panel the two rotary switches are easily labelled 1 – 8 but we are still uncertain about a tuning dial because we may not have the right variable capacitor for the inductor, this is the subject of the next section.

5.3 GETTING THE RANGE RIGHT

This is where we pause in receiver construction to remove some of the confusion which may still exist with regard to the tuning ingredients, wavelength, frequency, inductance and capacity, each of which has some bearing on the others, to fit together these four pieces of the puzzle, so to speak. For most crystal sets the inductance is fixed according to the variable capacitor available and we tune the receiver over the range by rotating the variable capacitor knob over half a

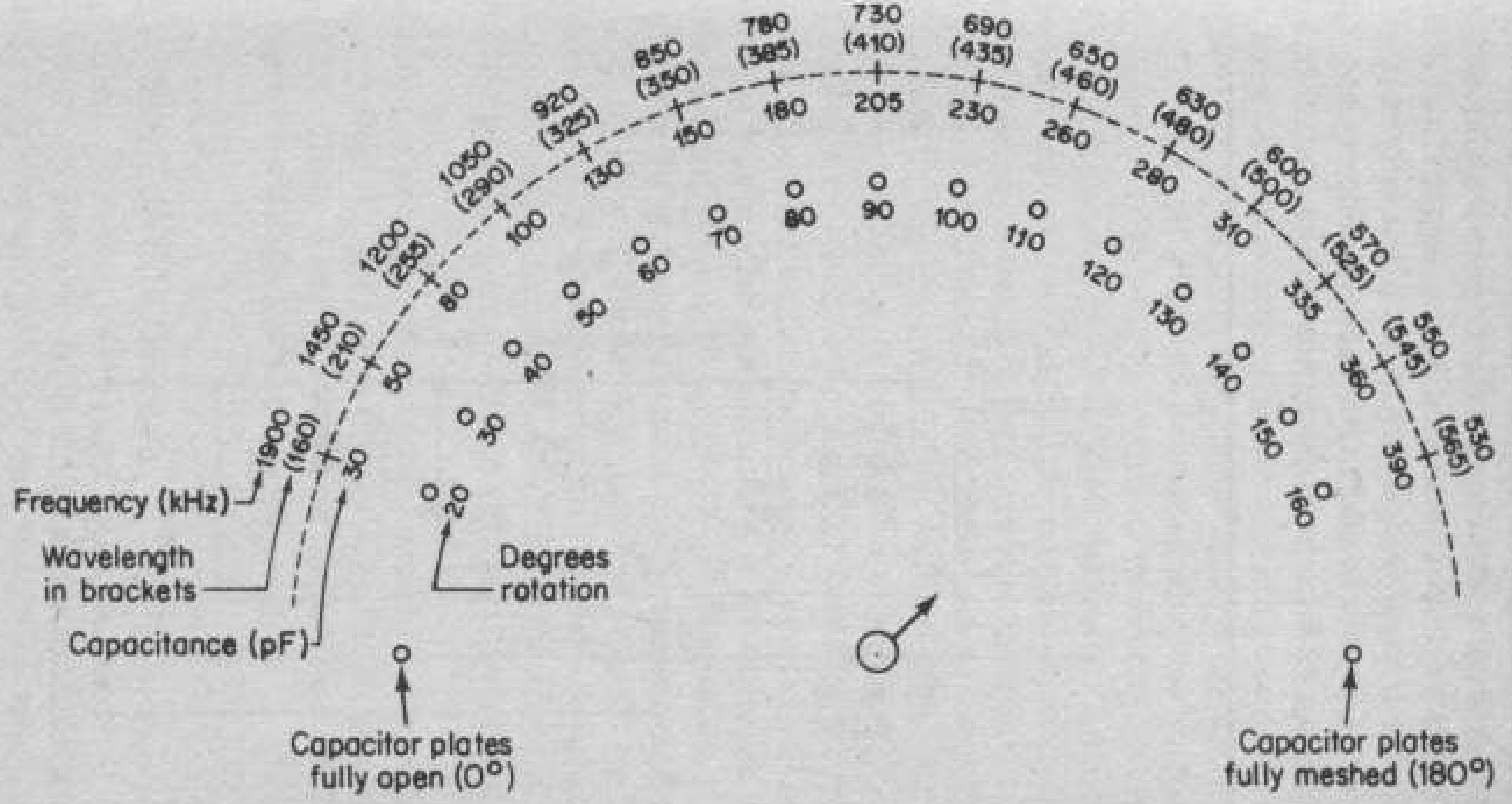


Fig. 18 Approximate capacitance and frequency values for 365 pF variable capacitor and 230 μH coil

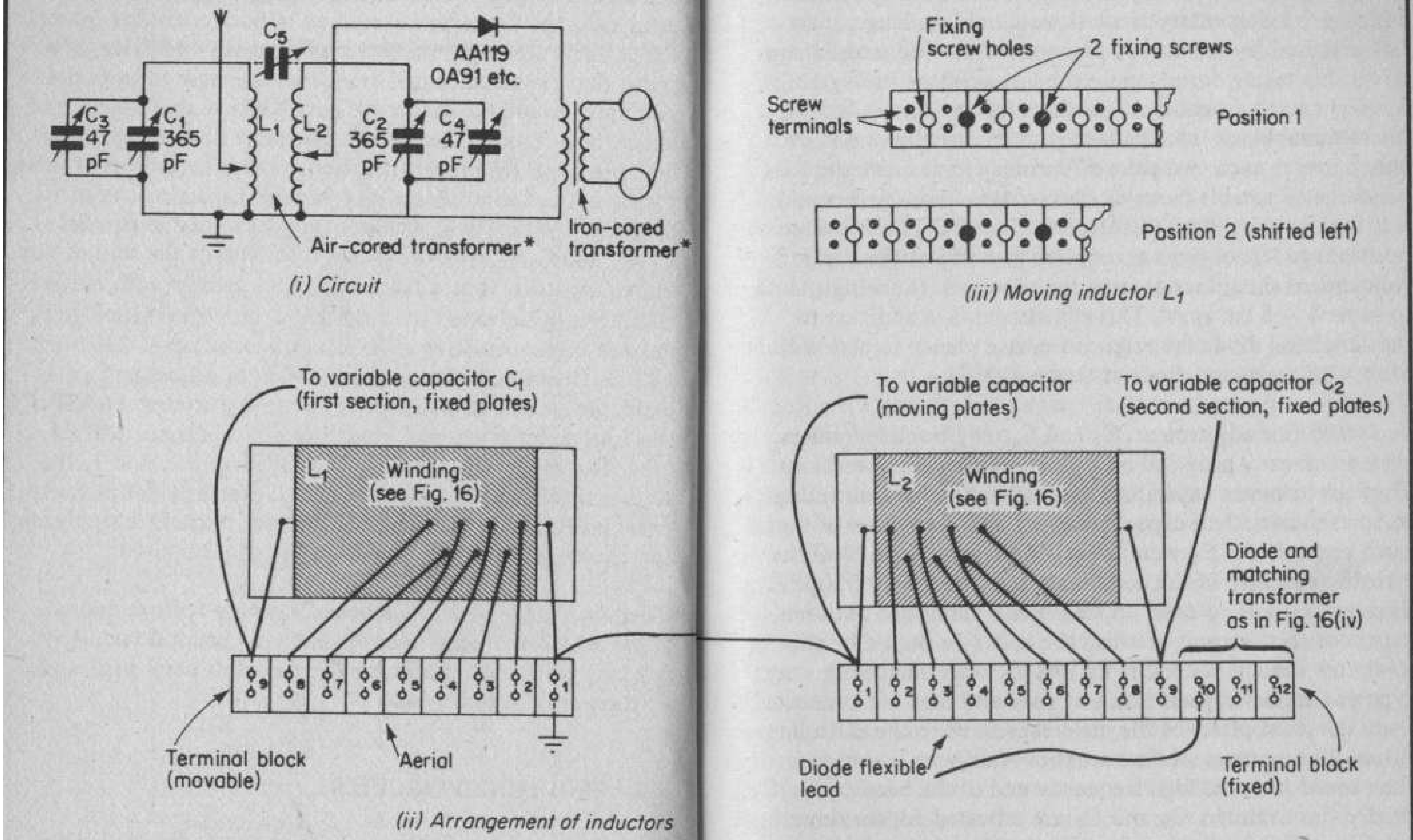


Fig. 21 *A double-tuned crystal receiver*

* See Section 2.4

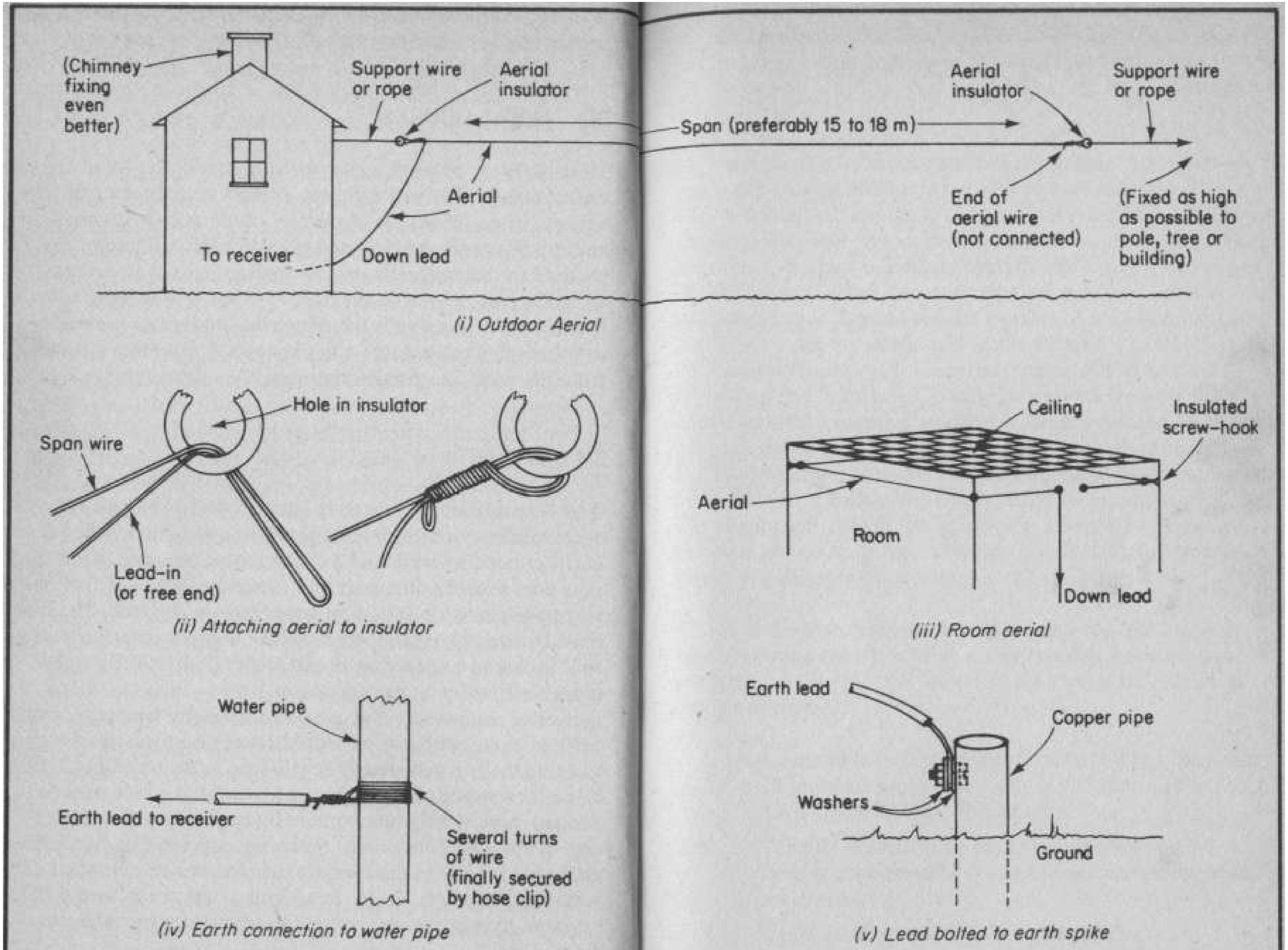


Fig. 12 Aerial/earth systems

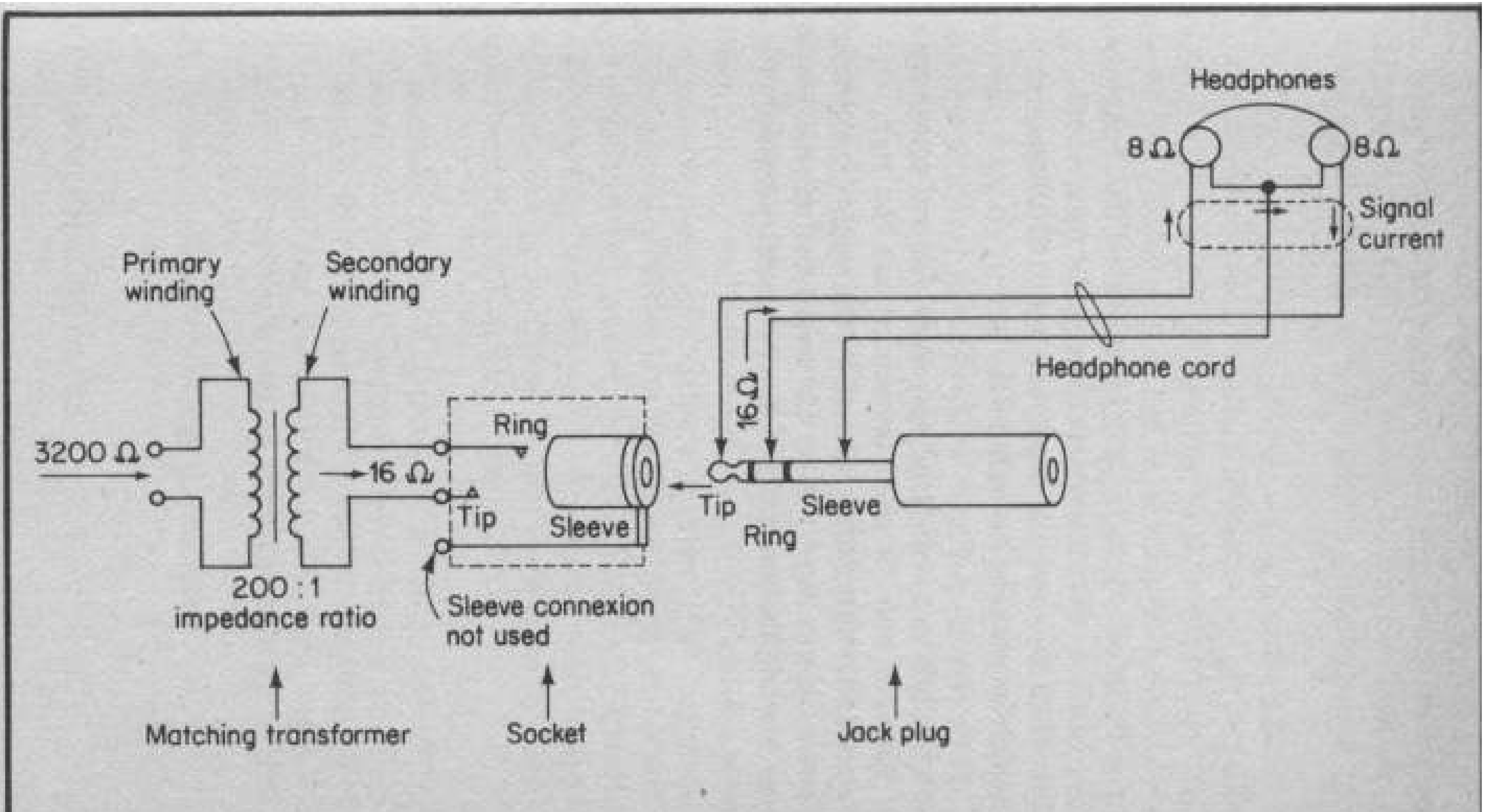
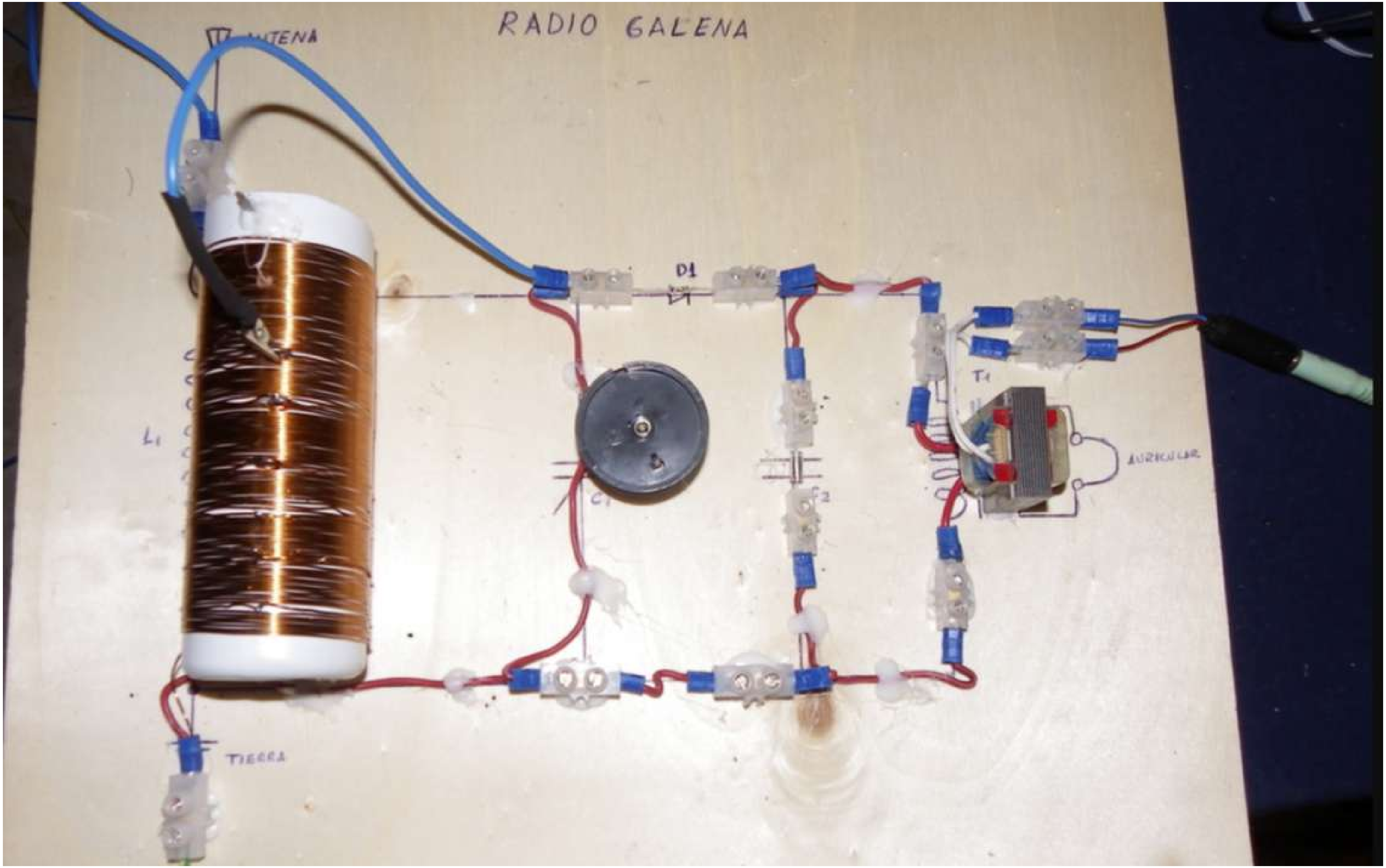
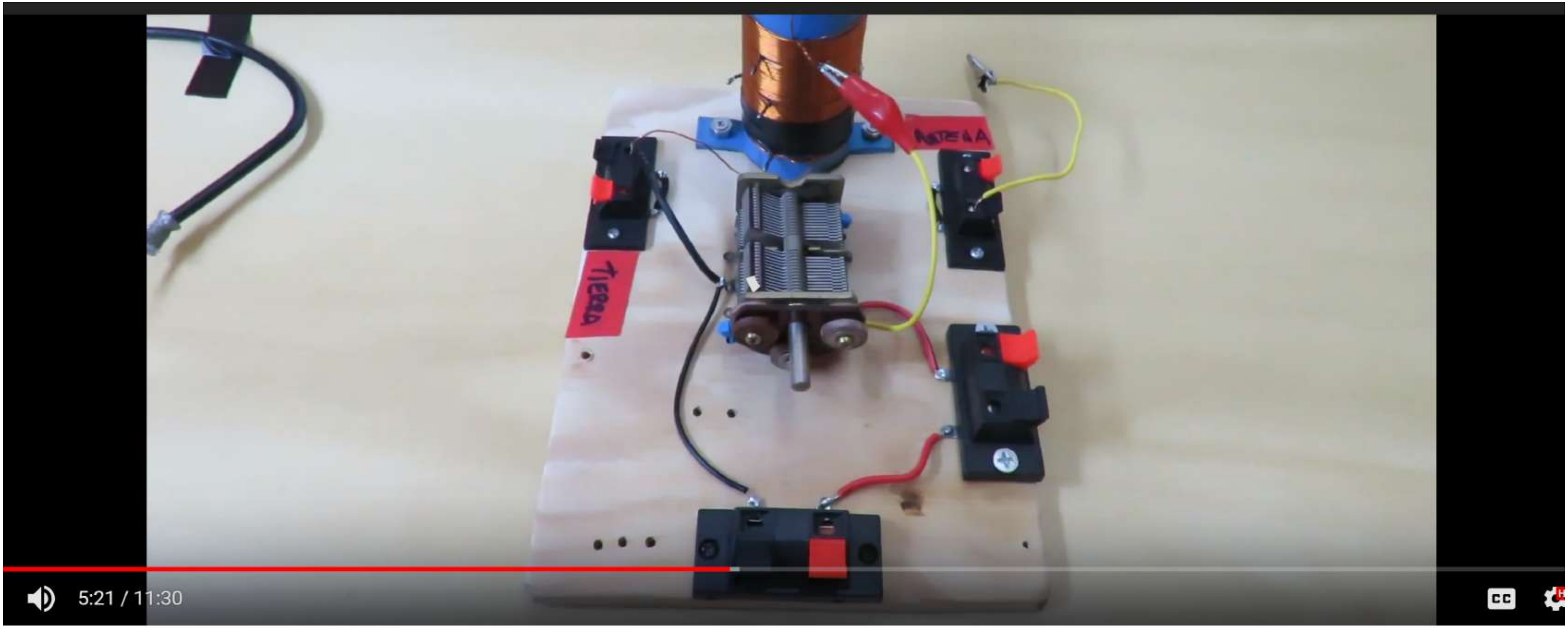


Fig. 11 Matching a high impedance receiver to low impedance headphones

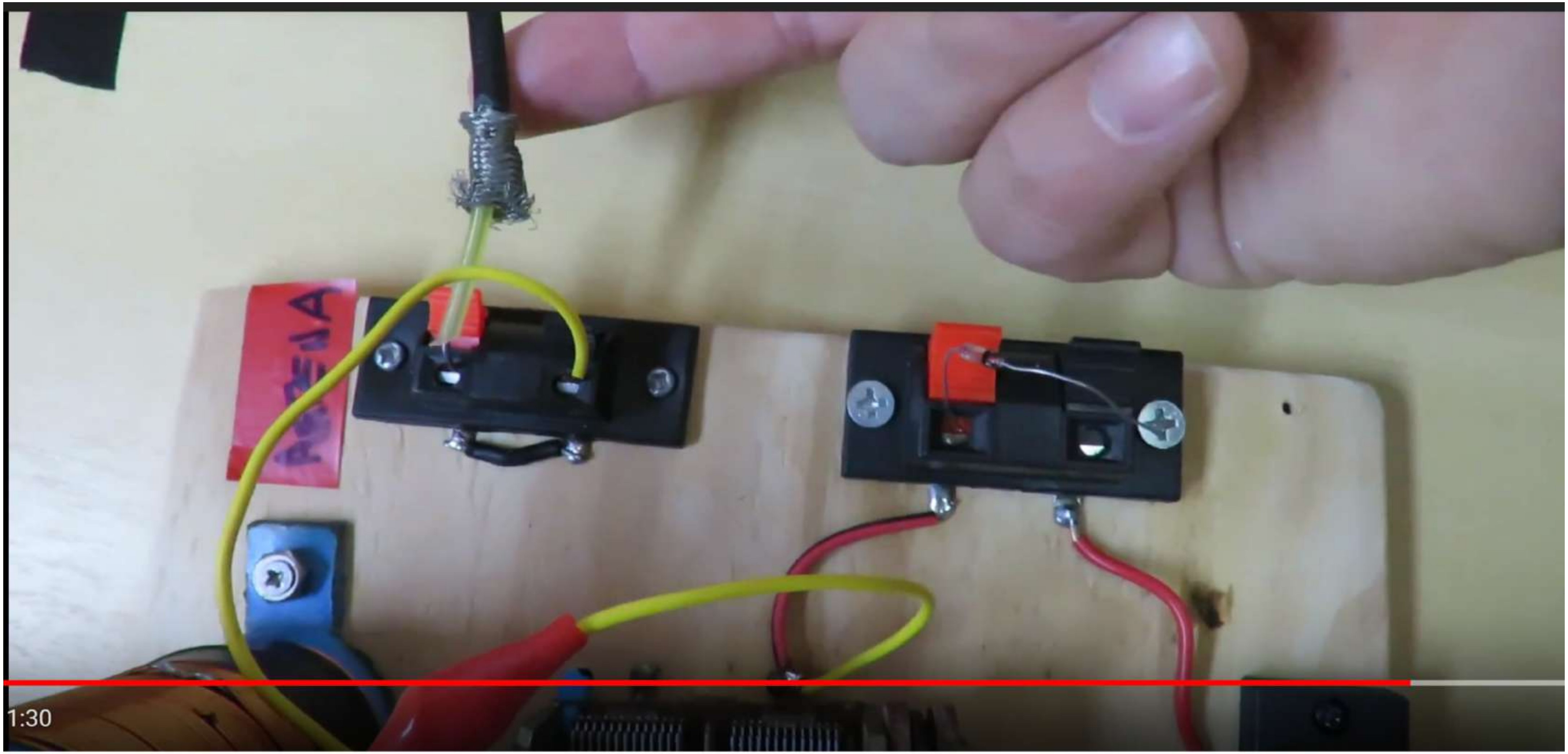

RADIO GALENA
D1
T1
AURICULAR
C1
C2
L1
TIERRA



Up next

AUTOPLA

Radio Galena en la practica (con diodo detector)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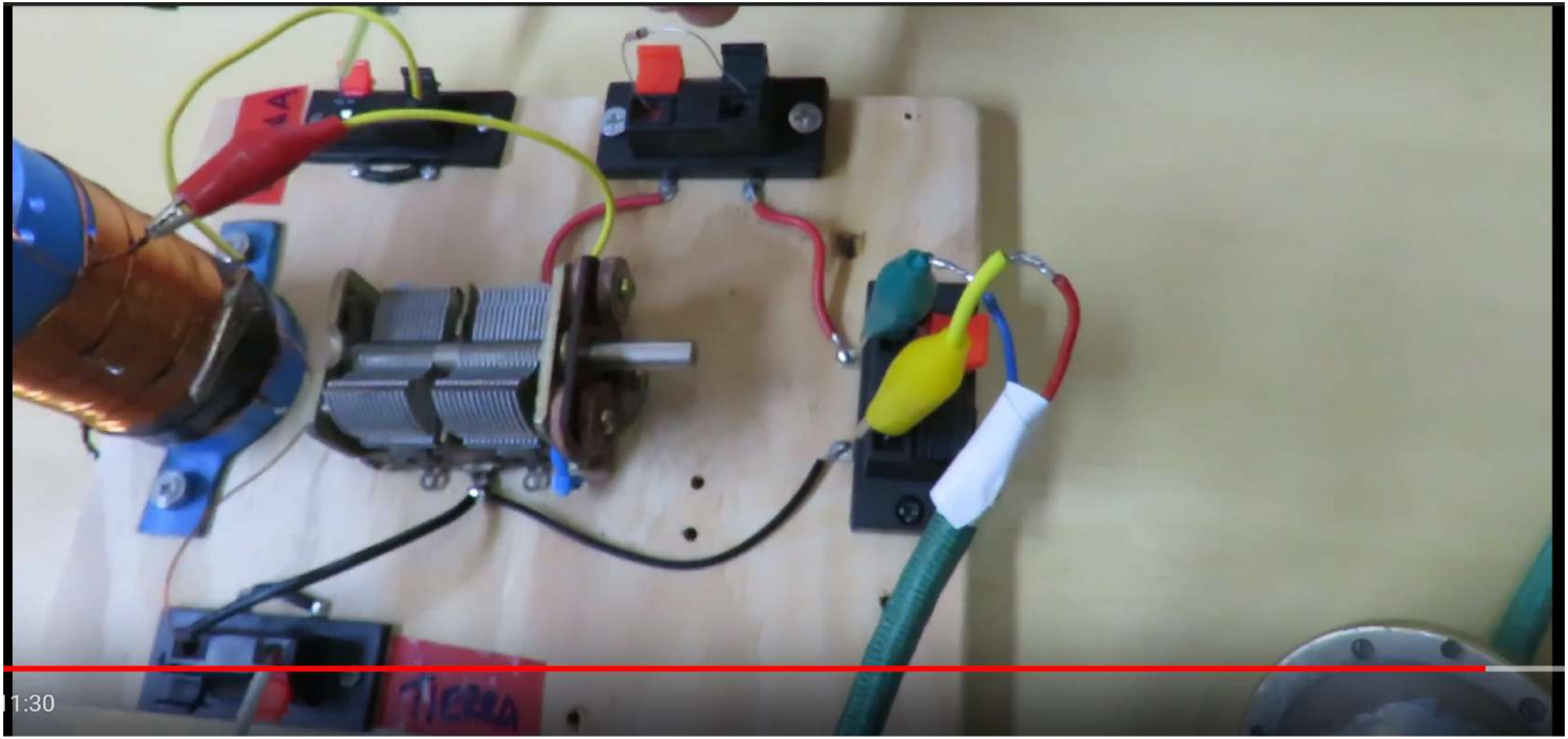
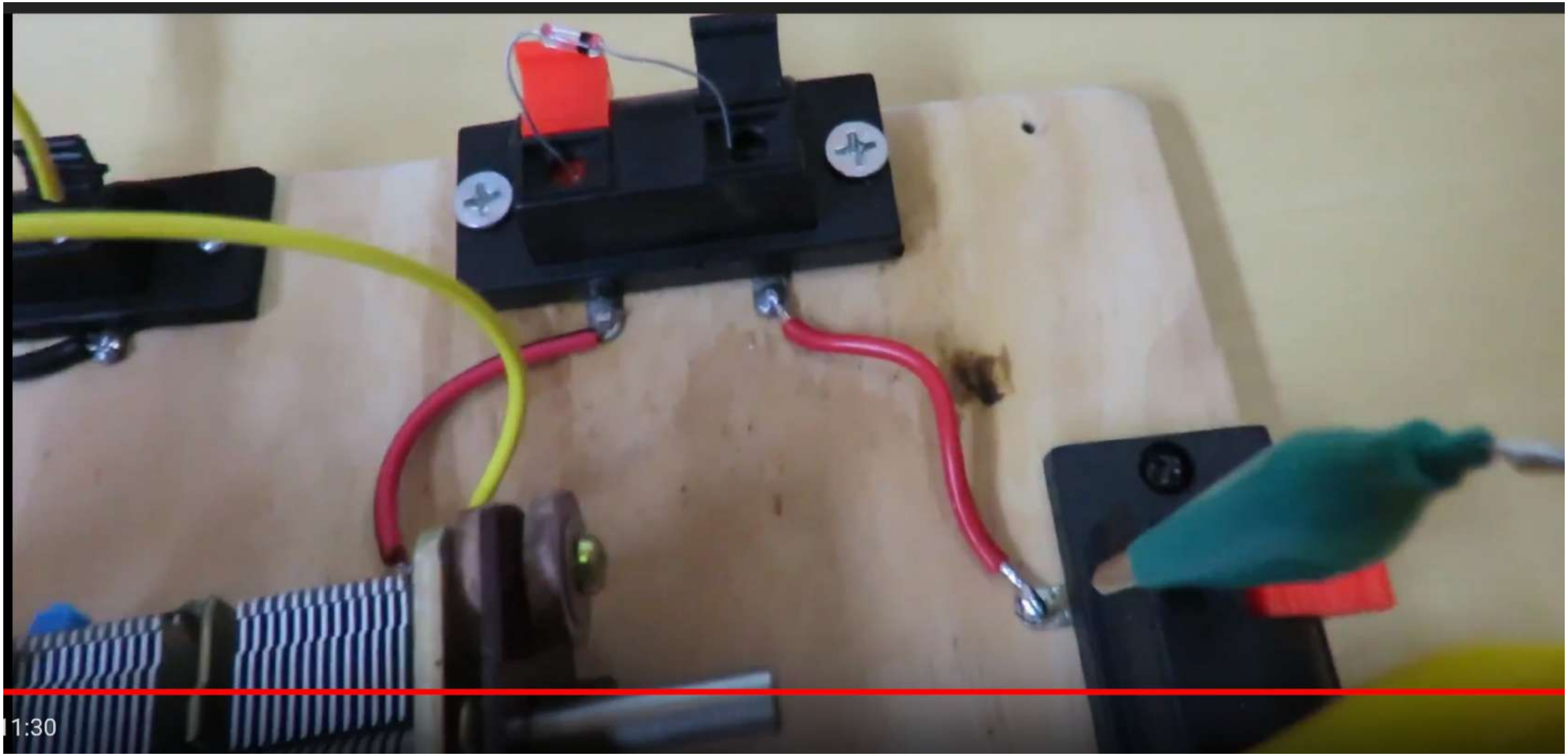
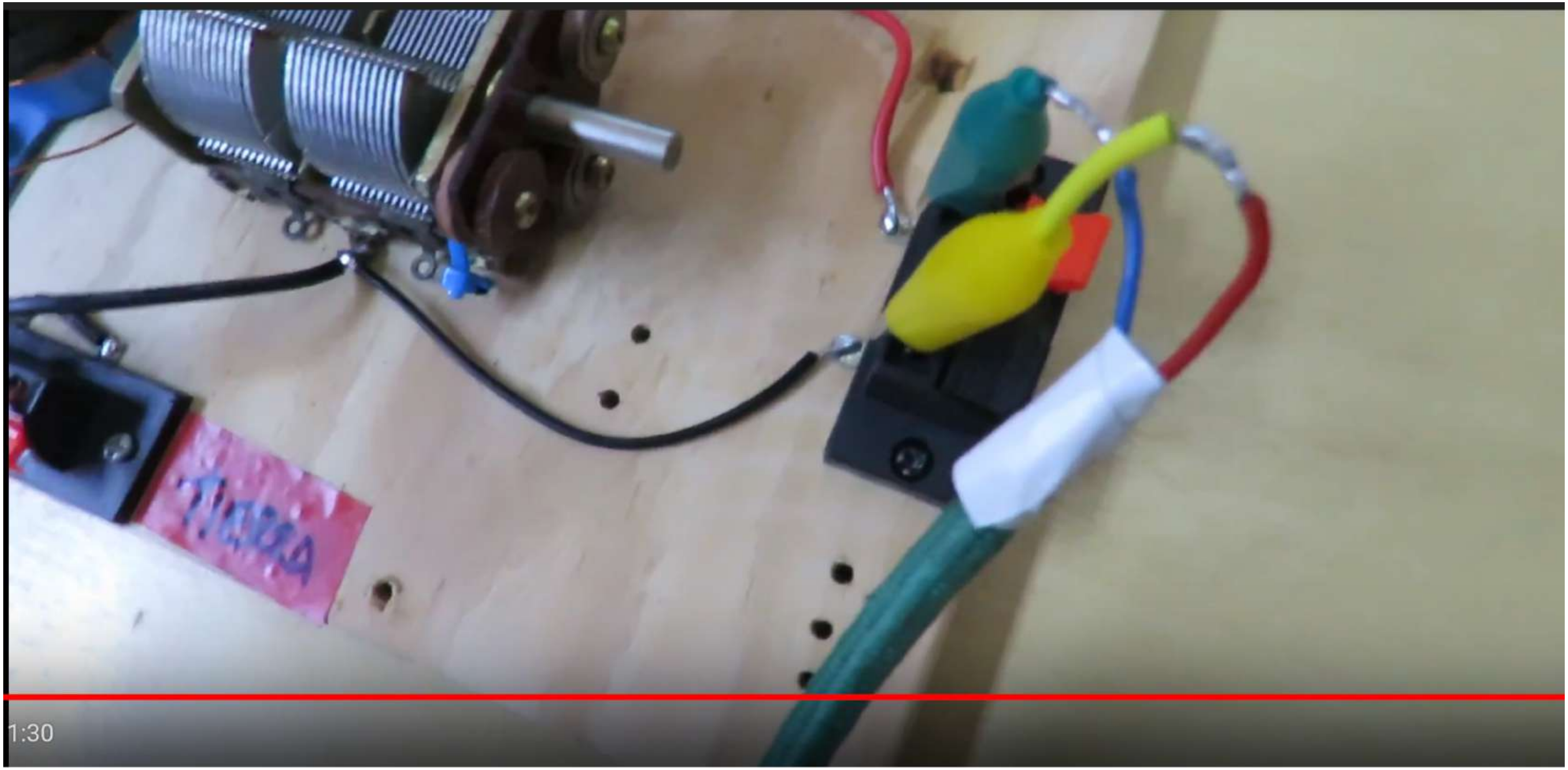

TIERRA


11:30


11:30


TIERRA
:30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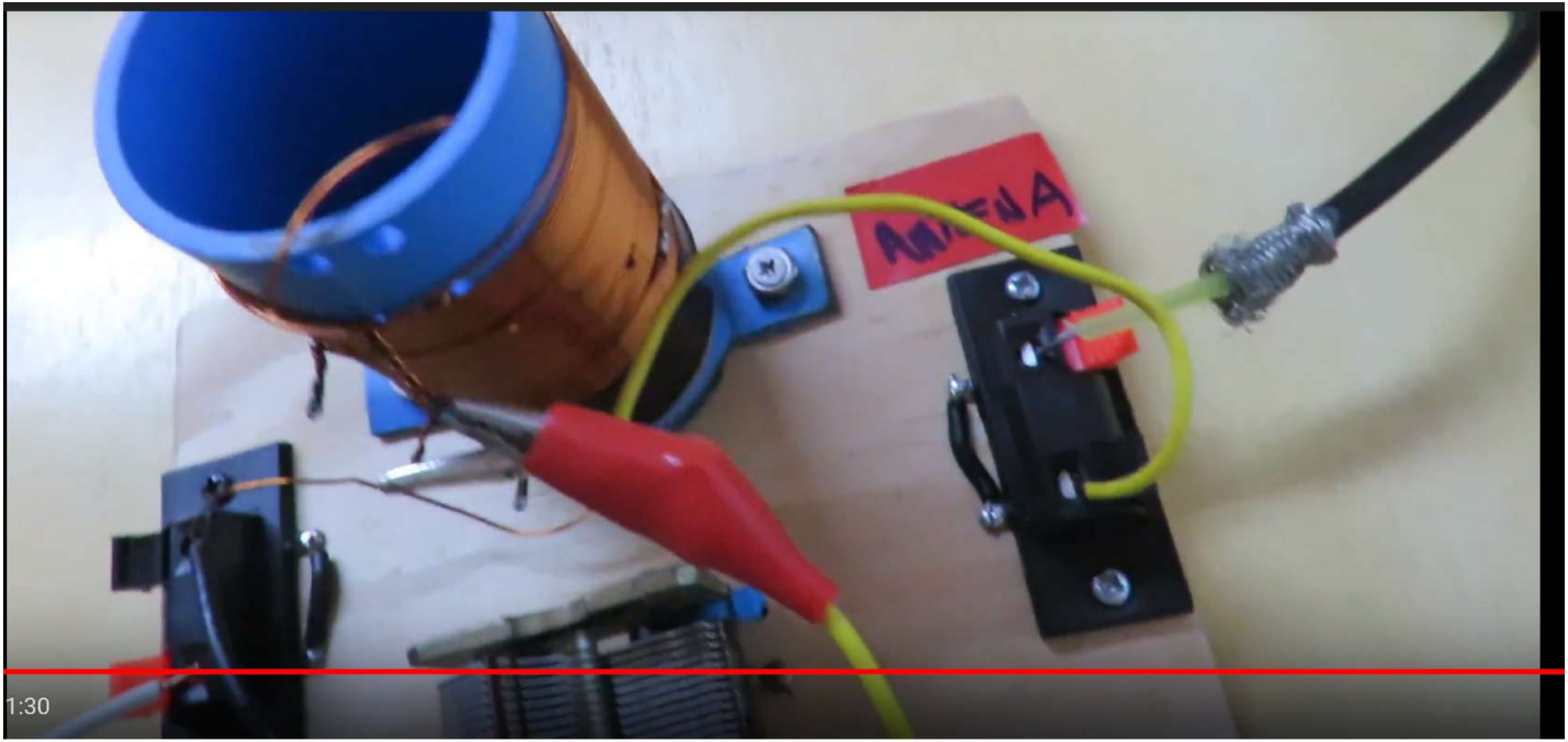
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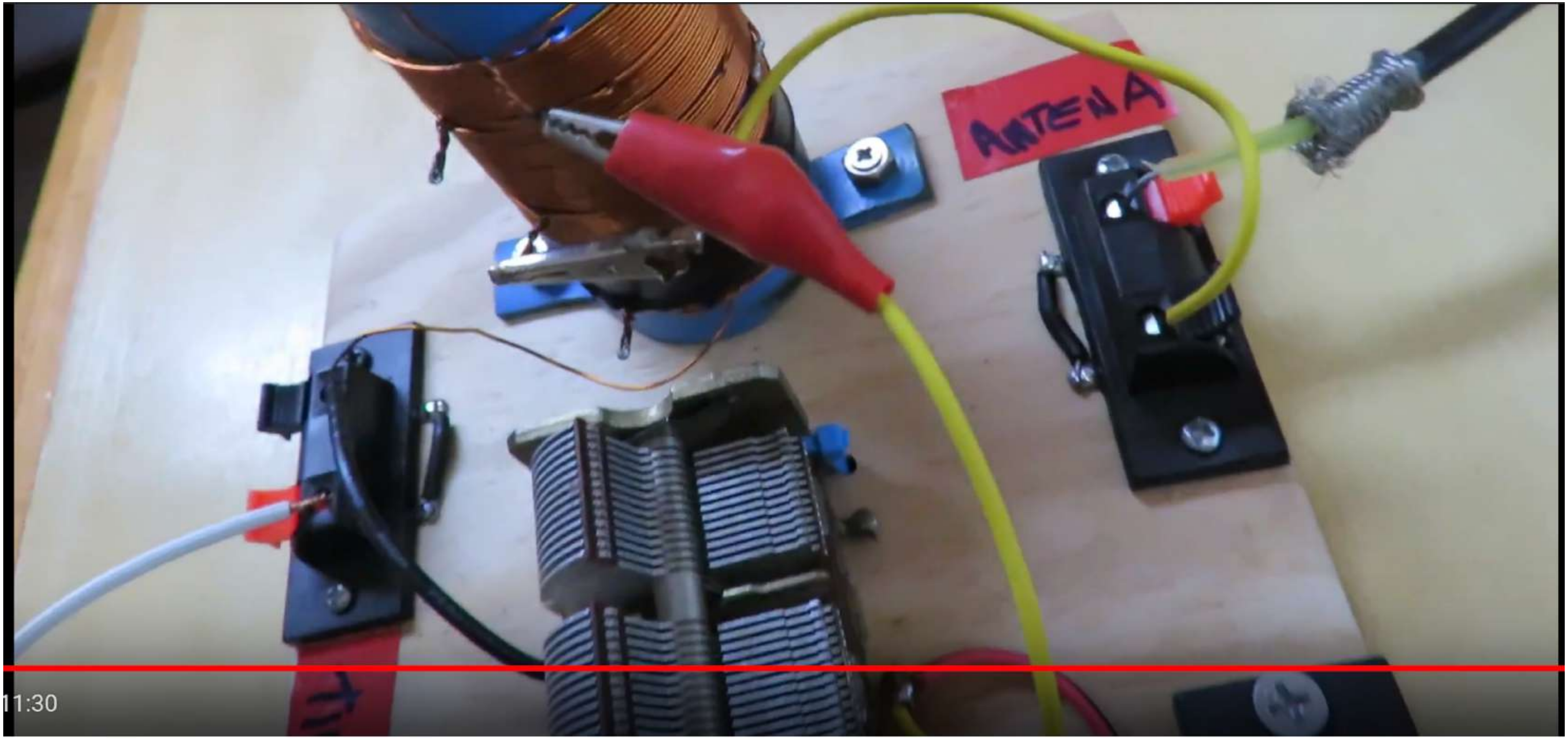
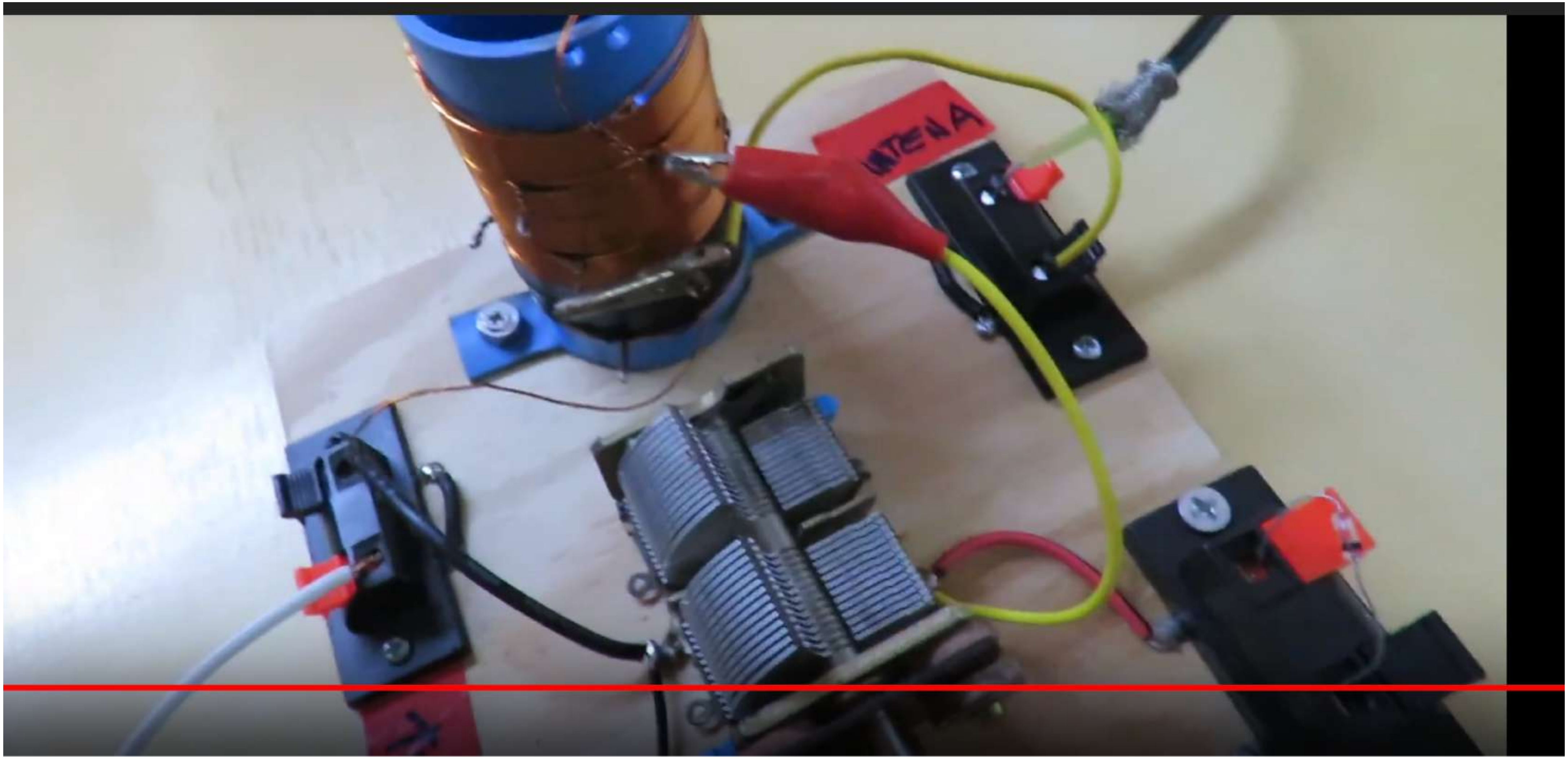
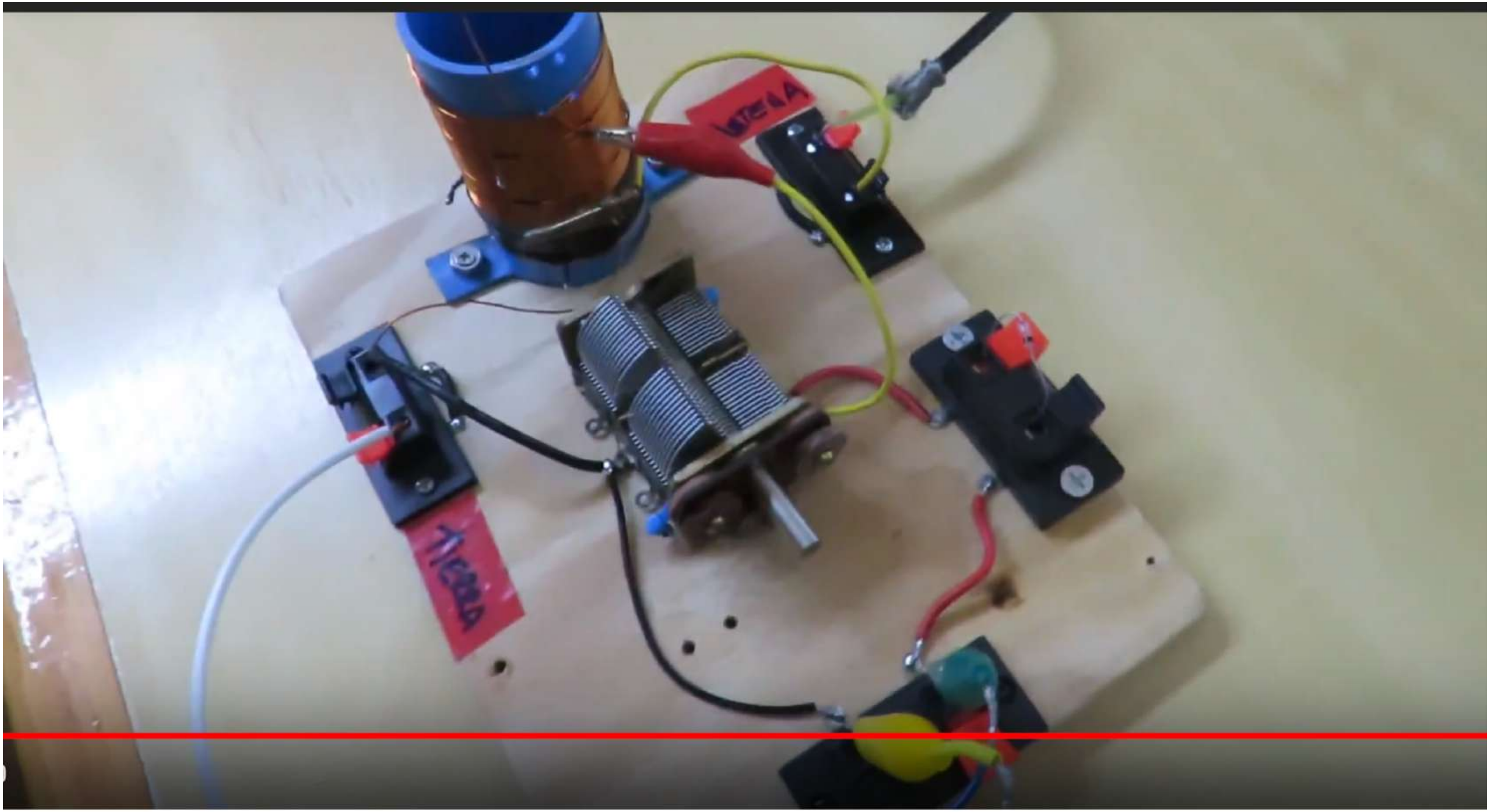

ANTENA
11:30

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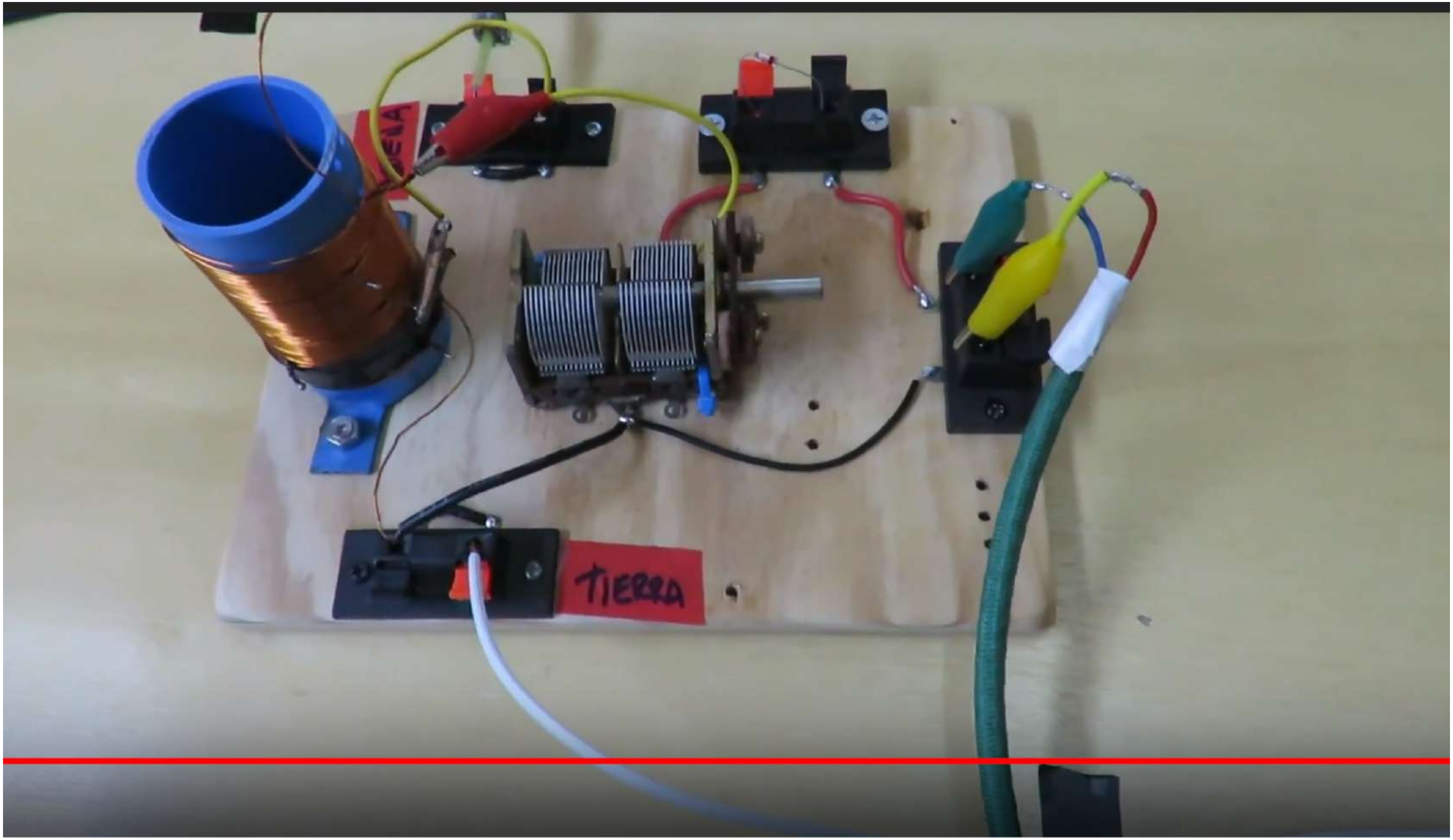
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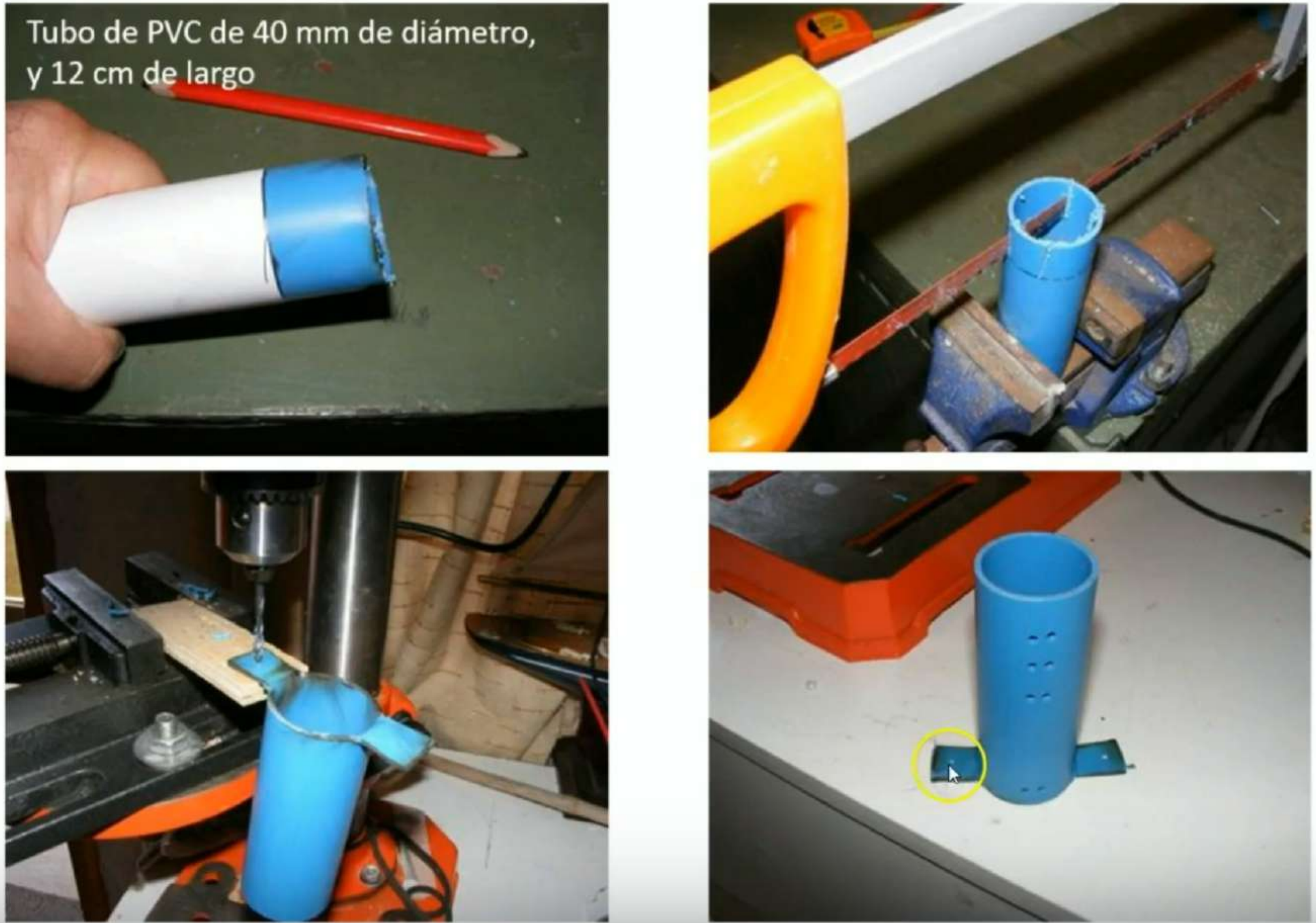
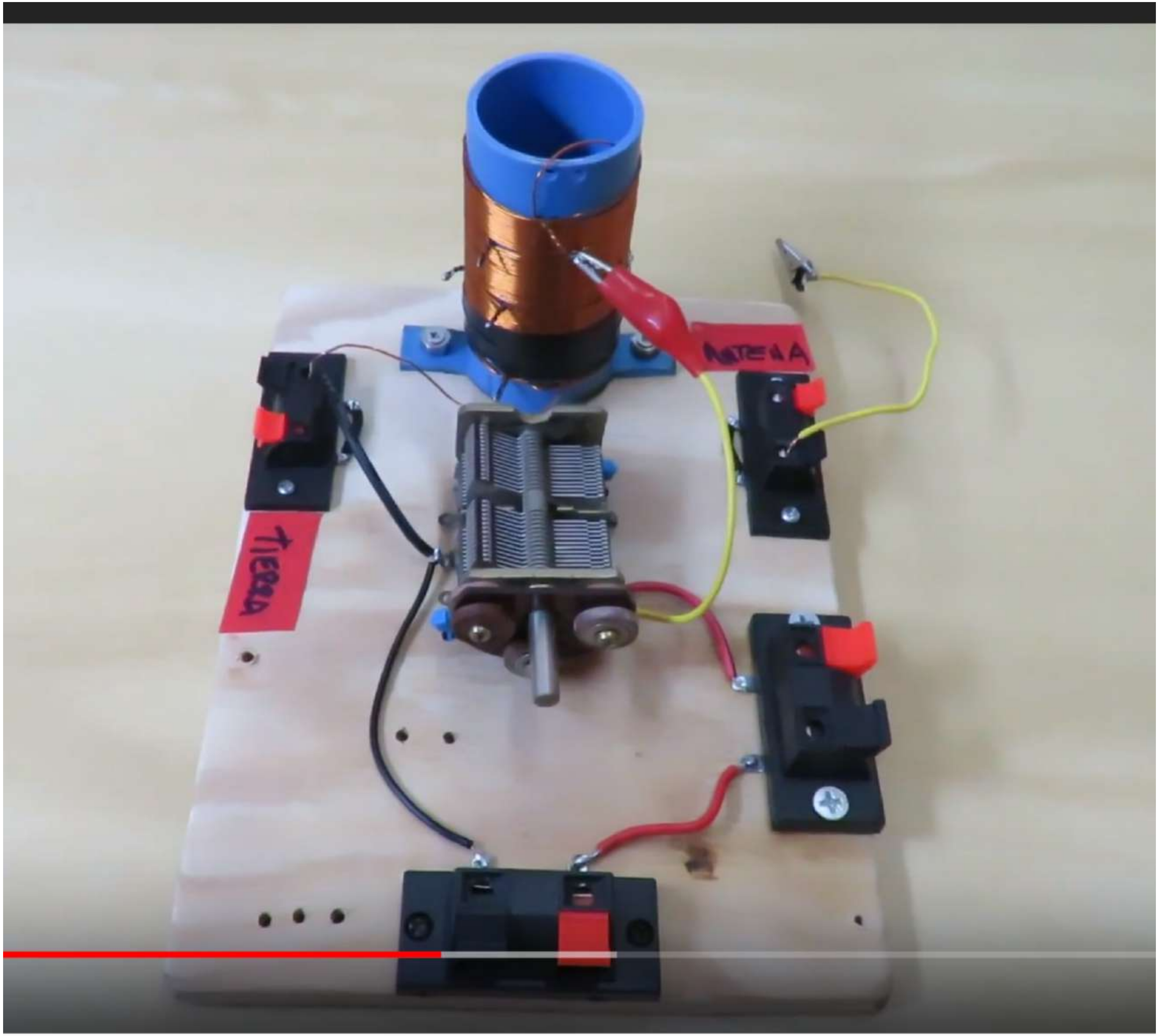

Tubo de PVC de 40 mm de diámetro,
y 12 cm de largo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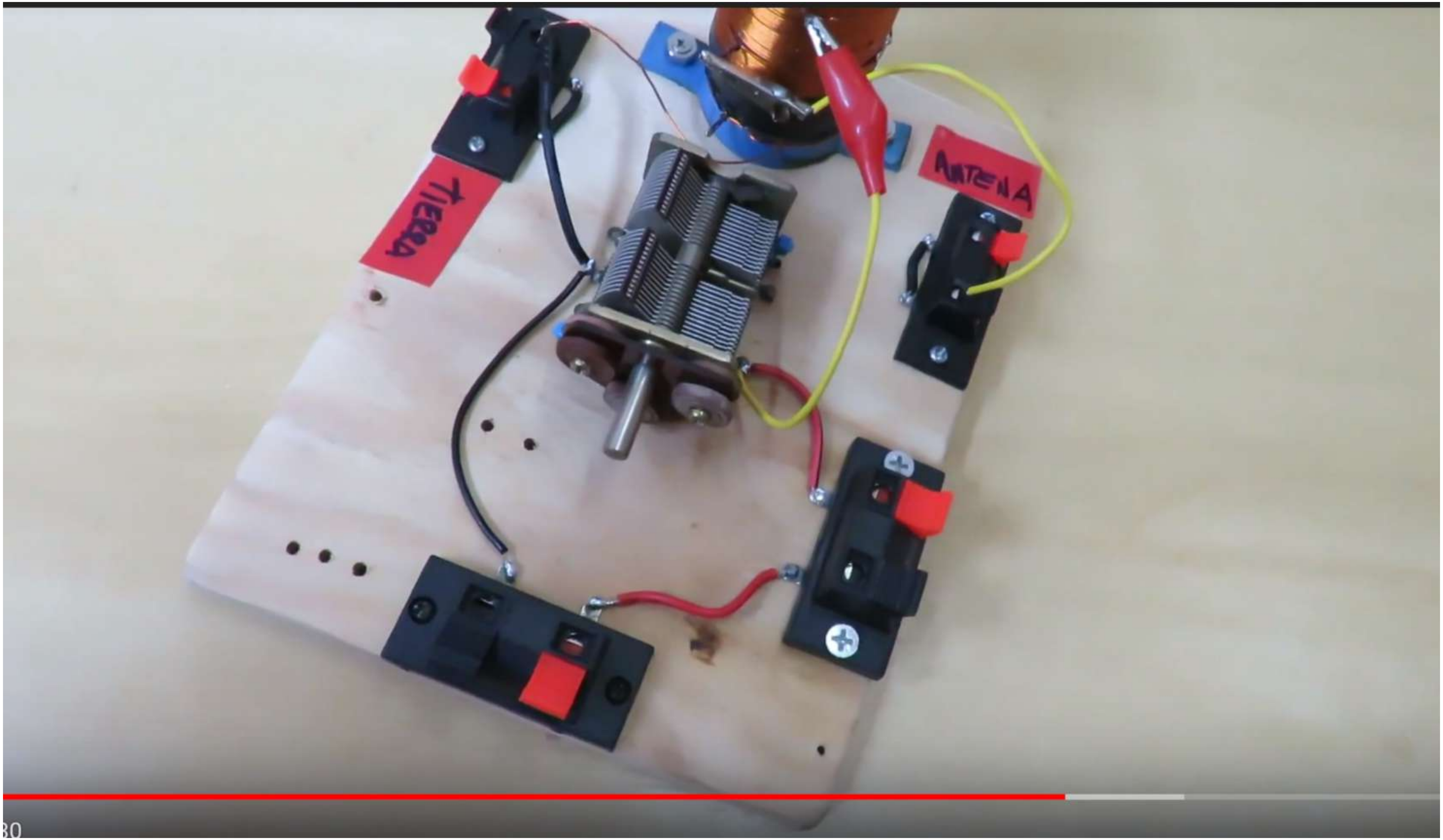
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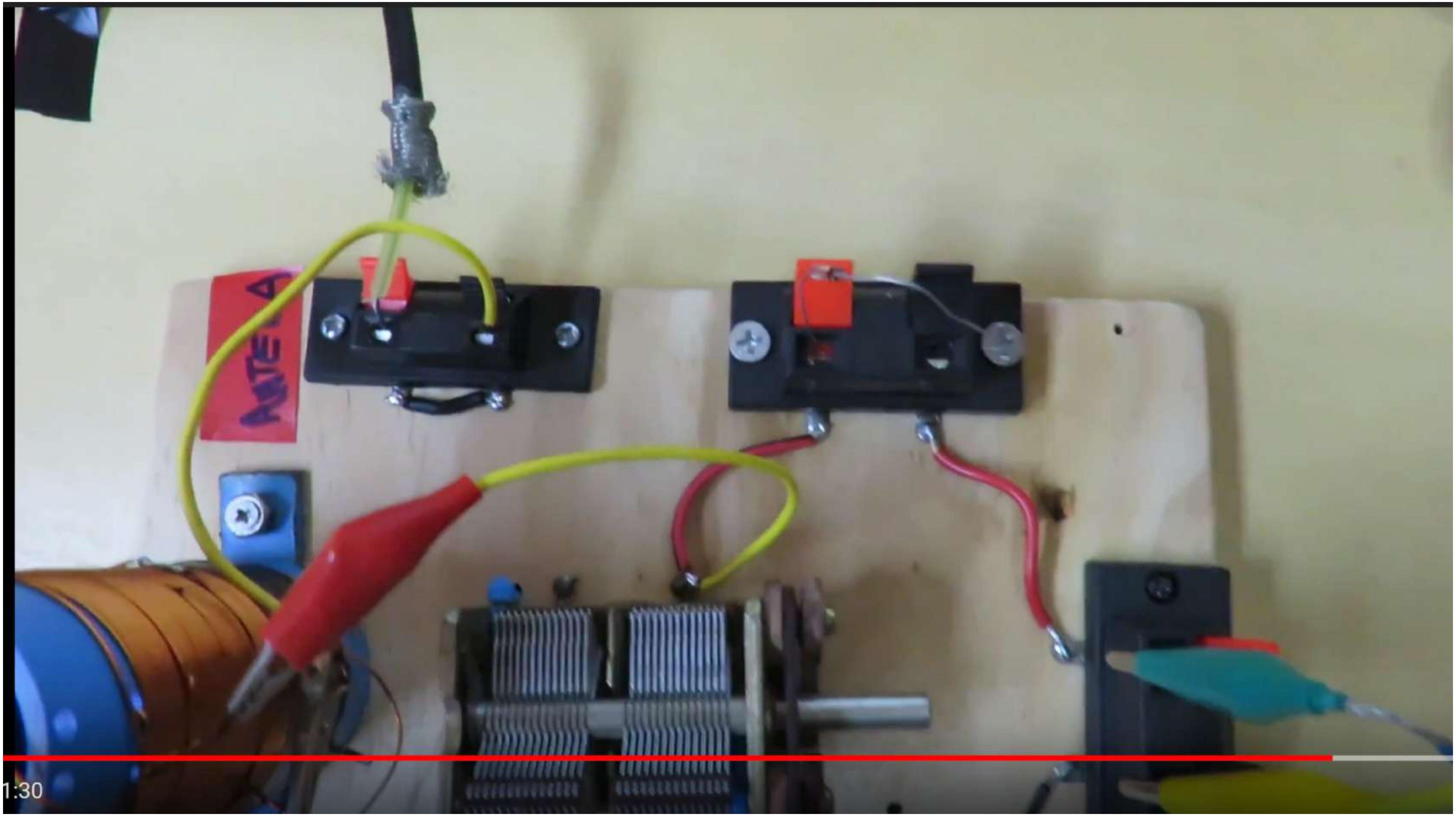
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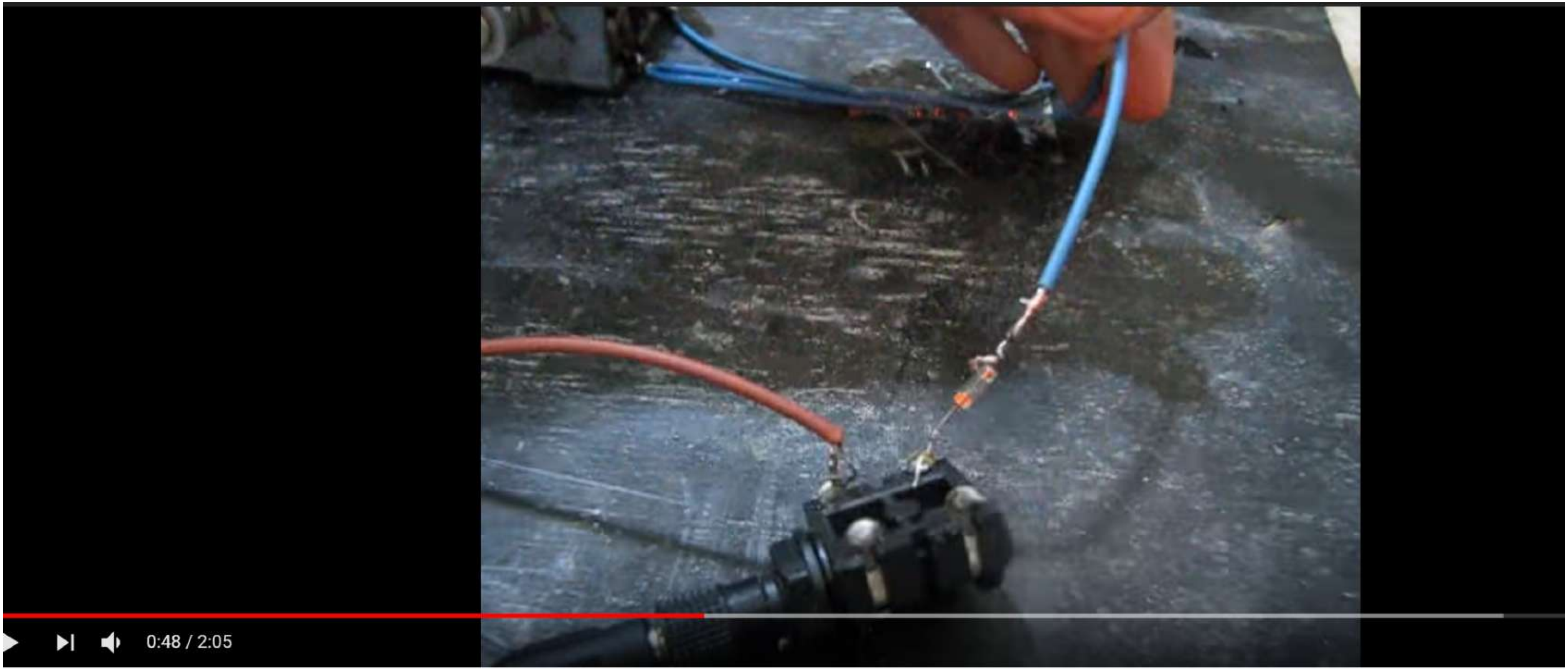
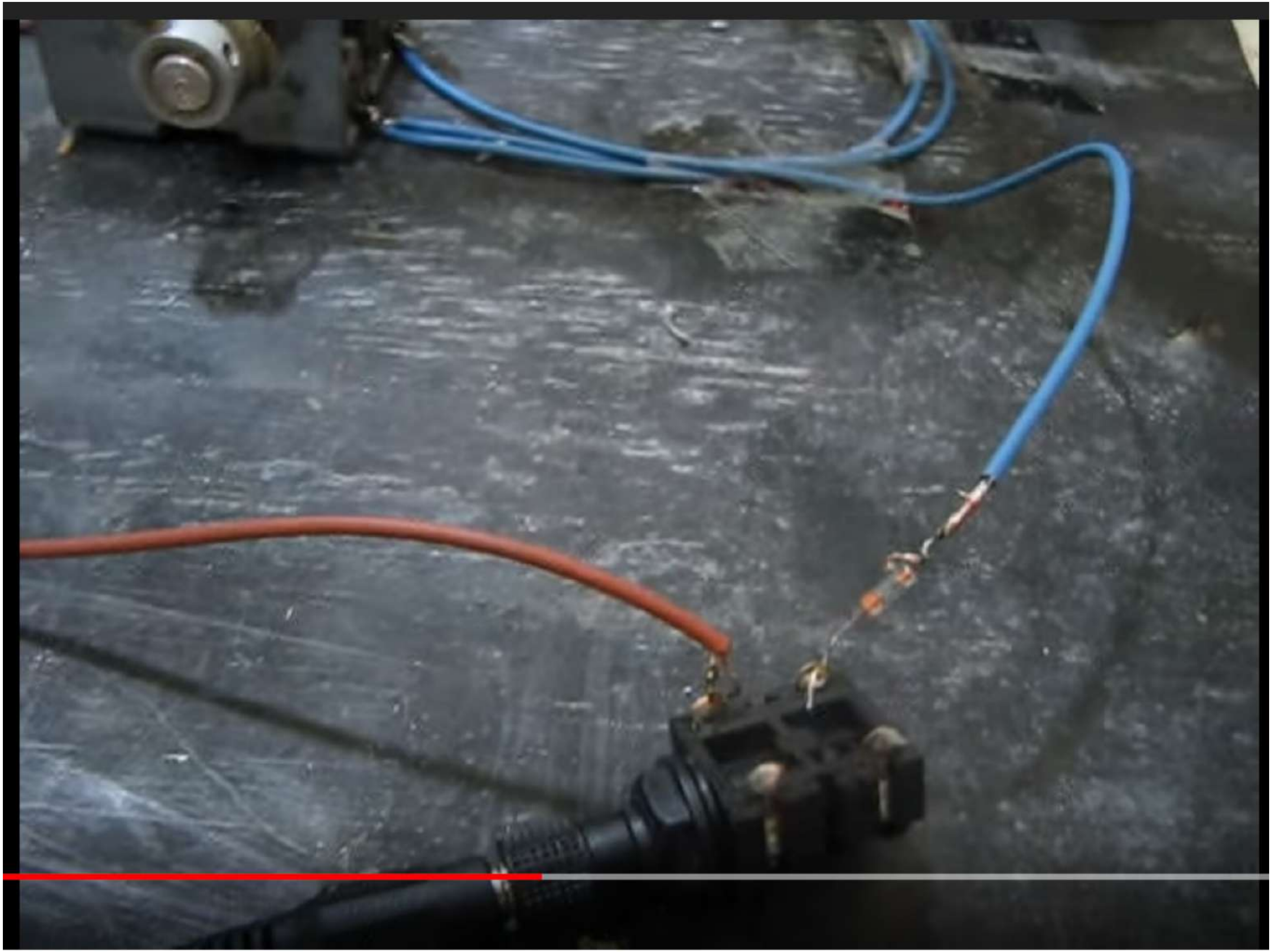
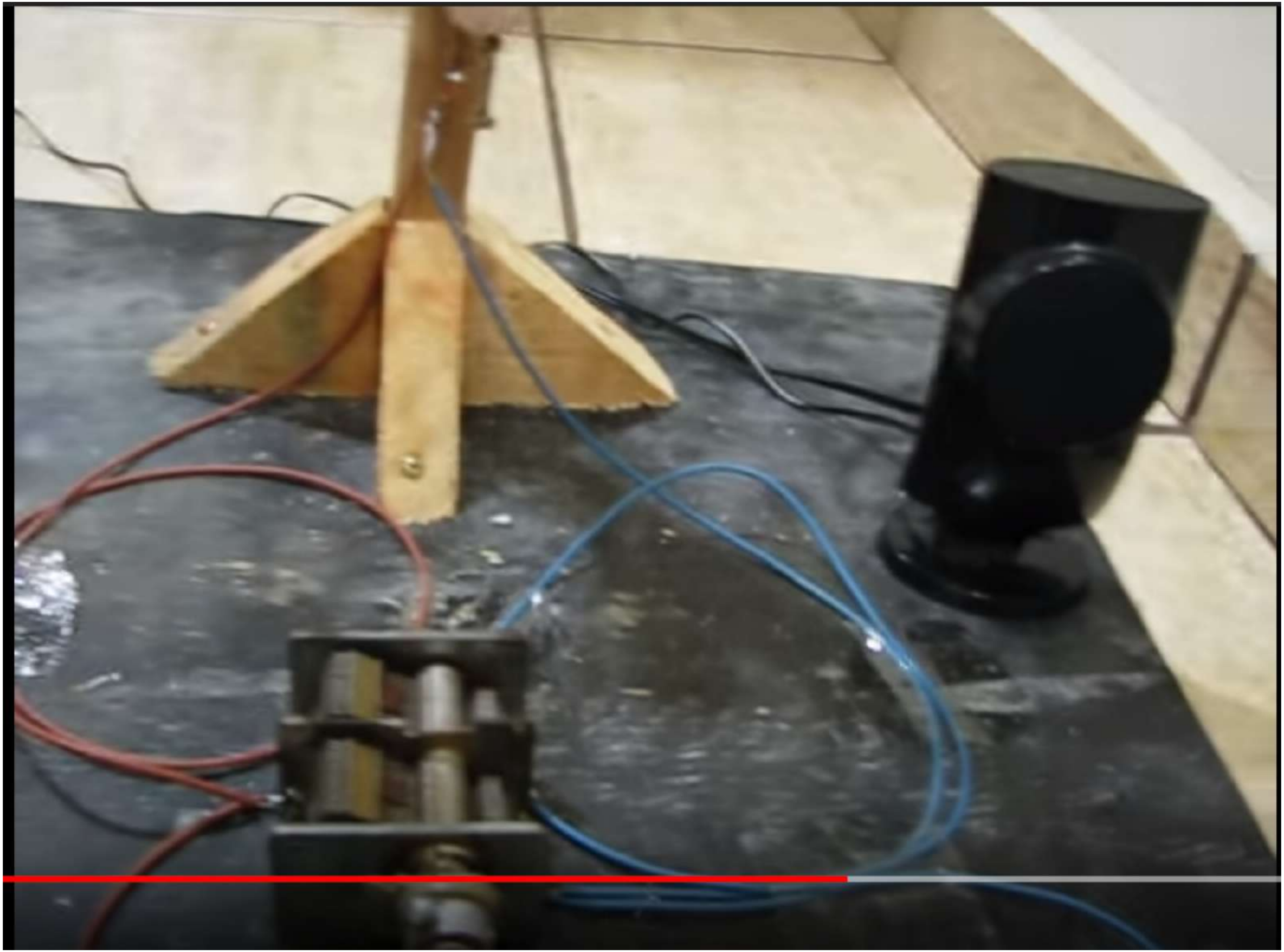


Rádio de Galena com Antena de Quadro - UTFPR - TD

Up next



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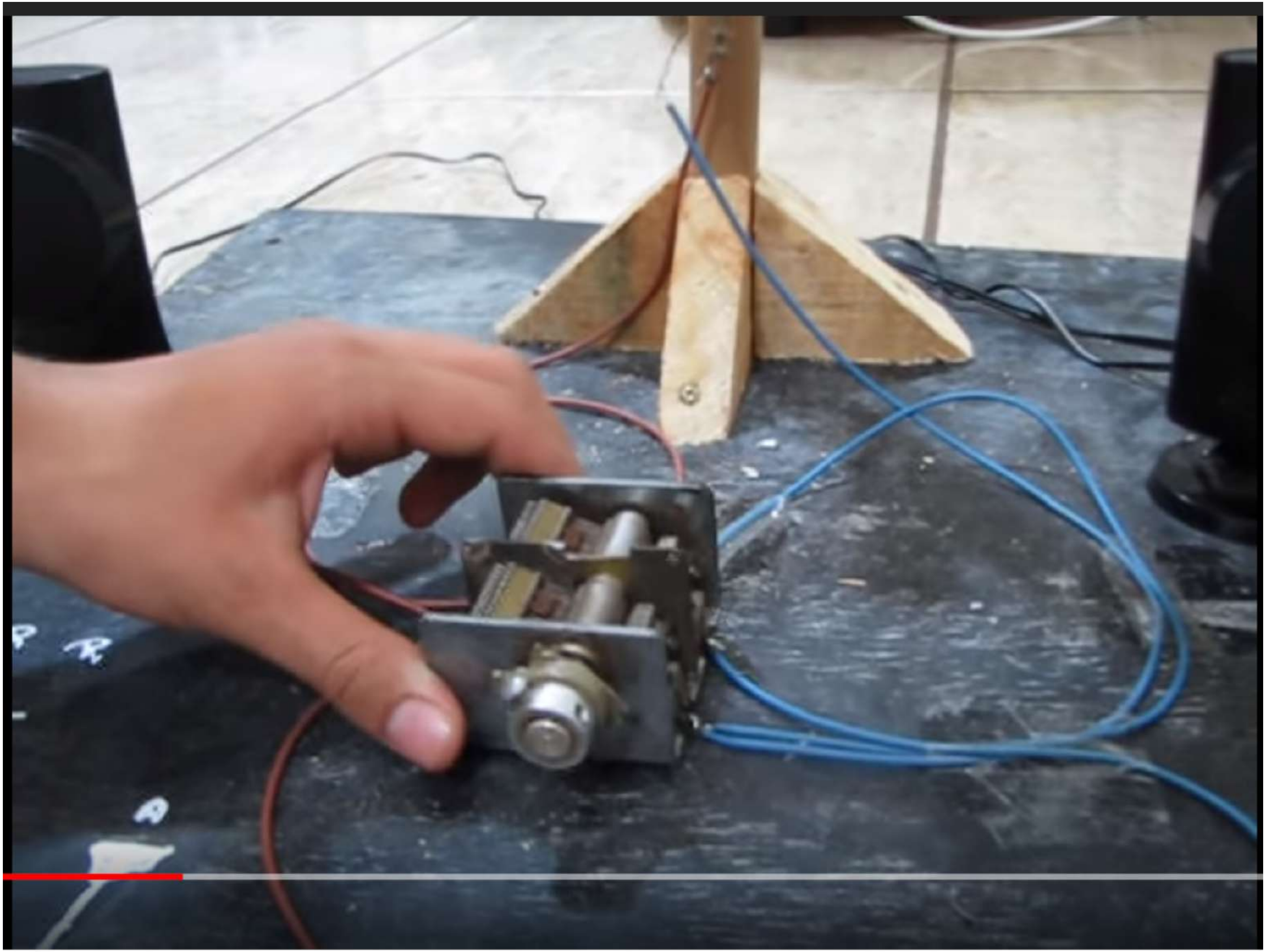

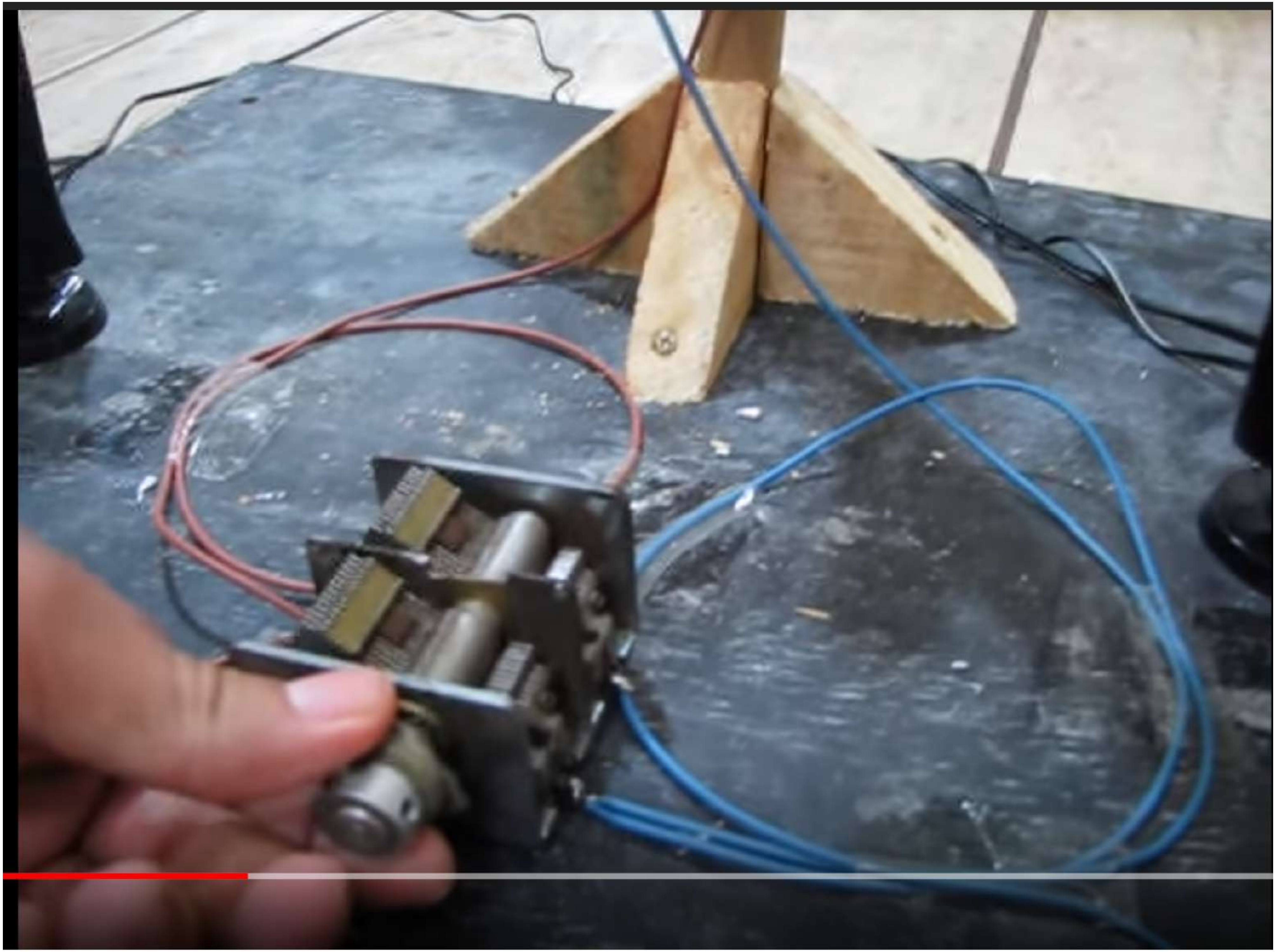

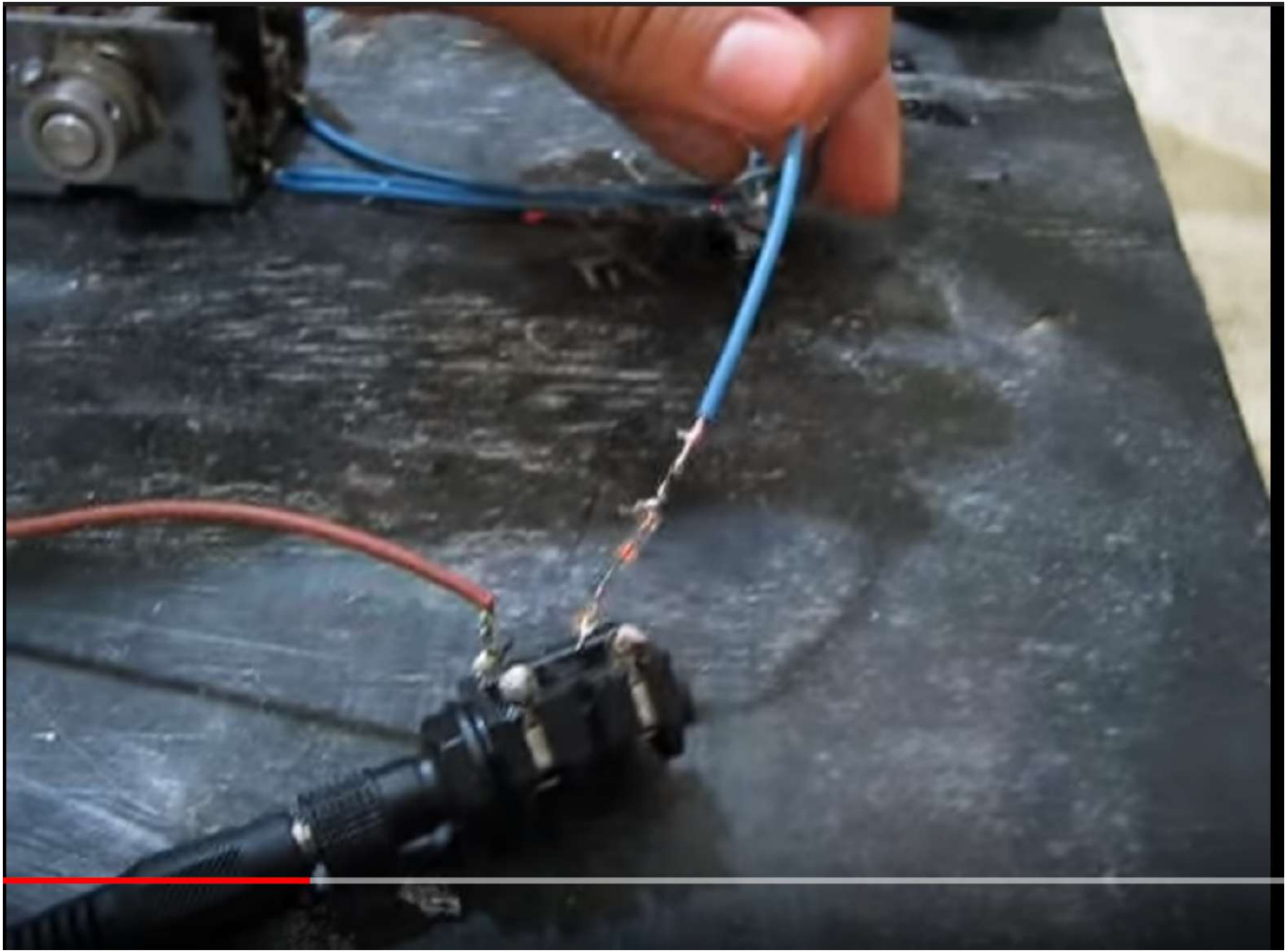

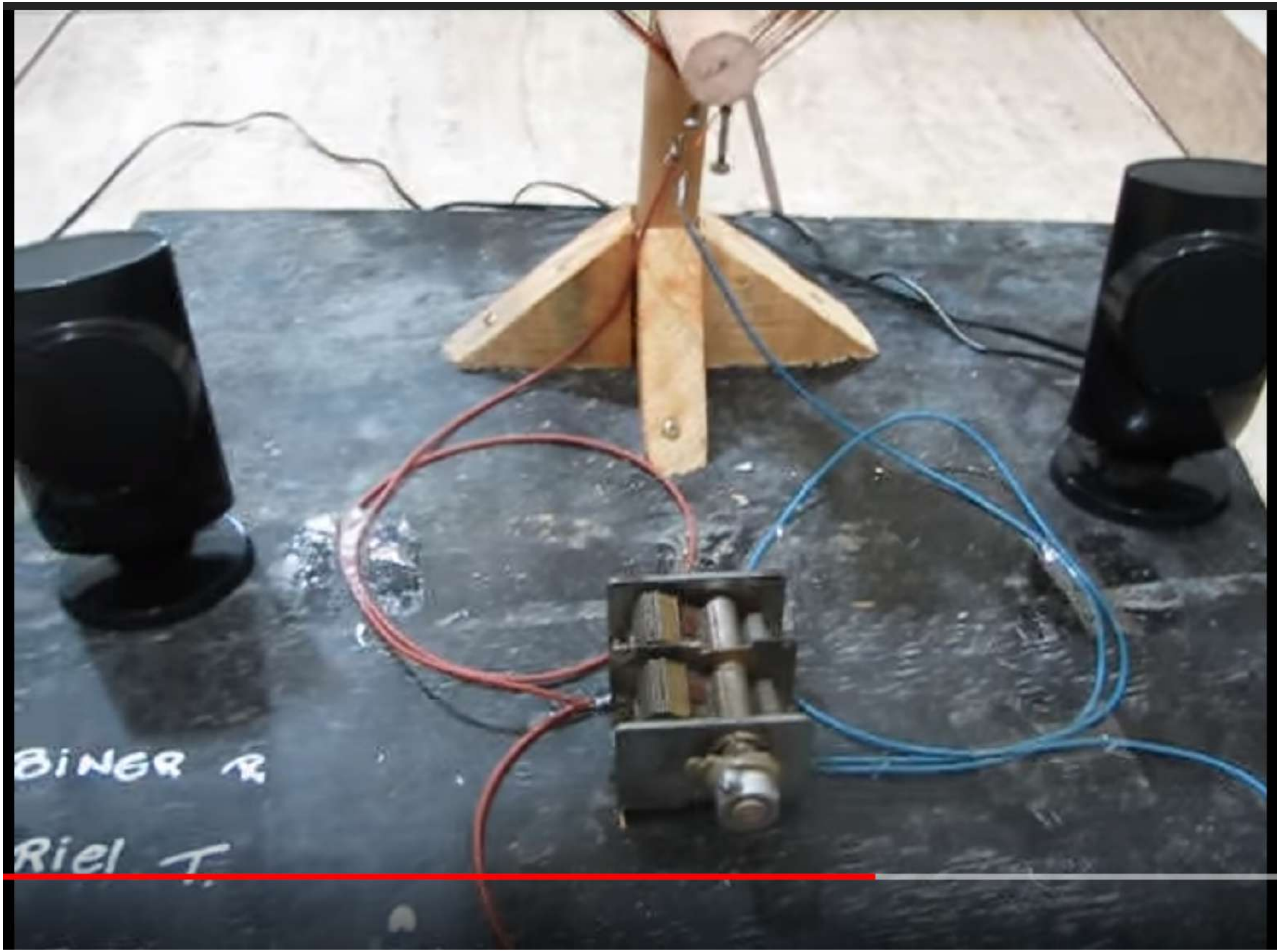
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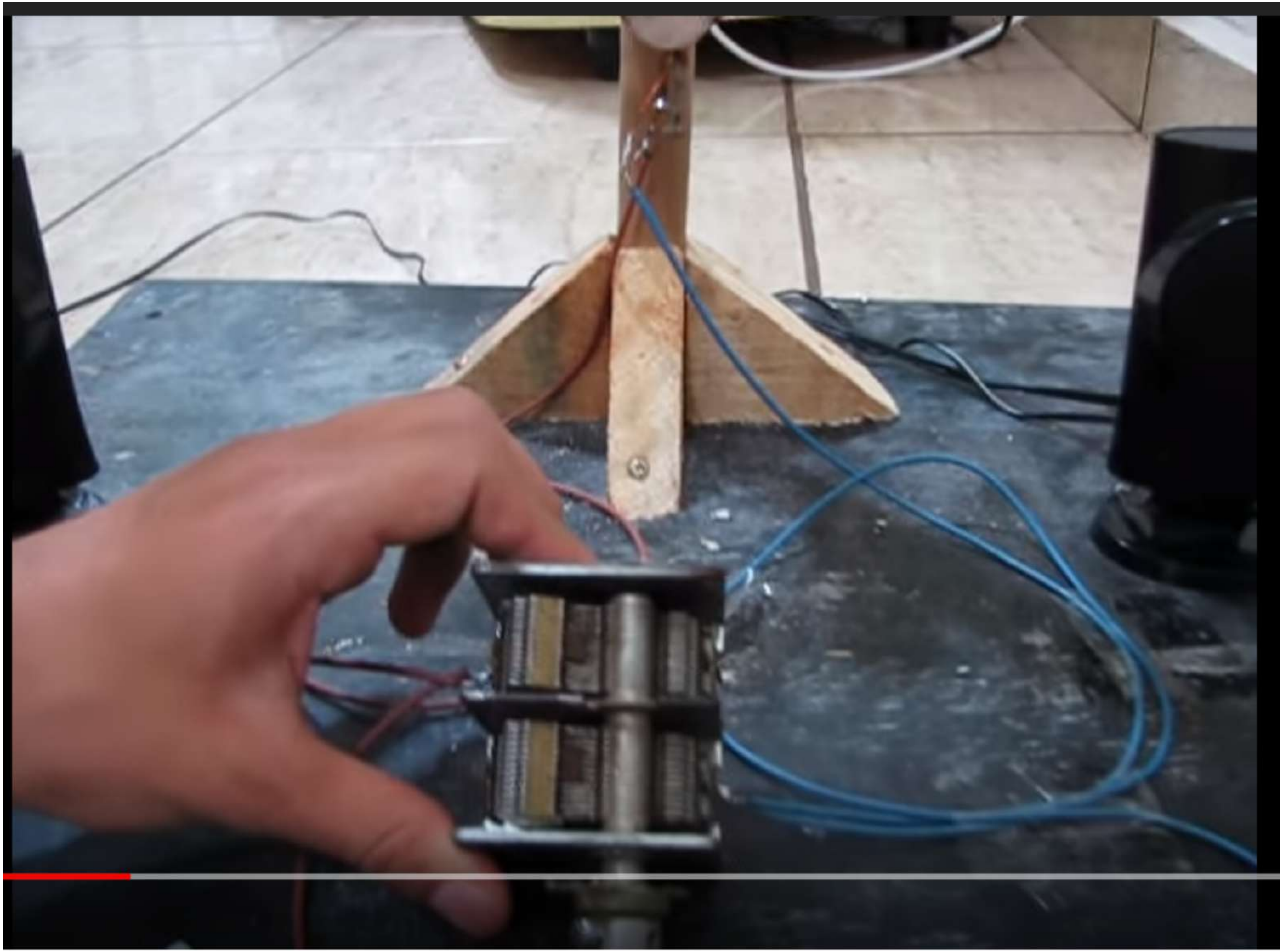
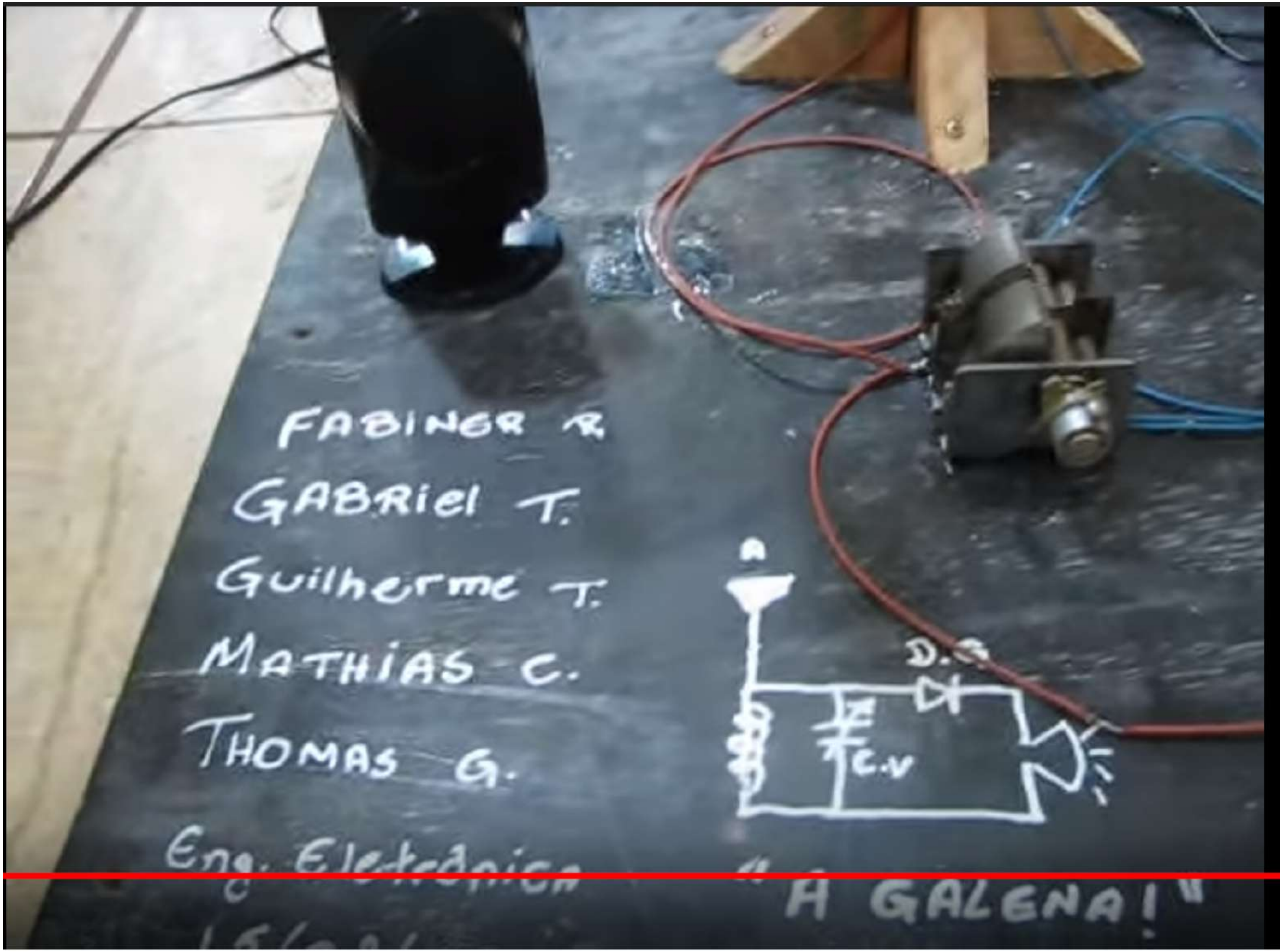
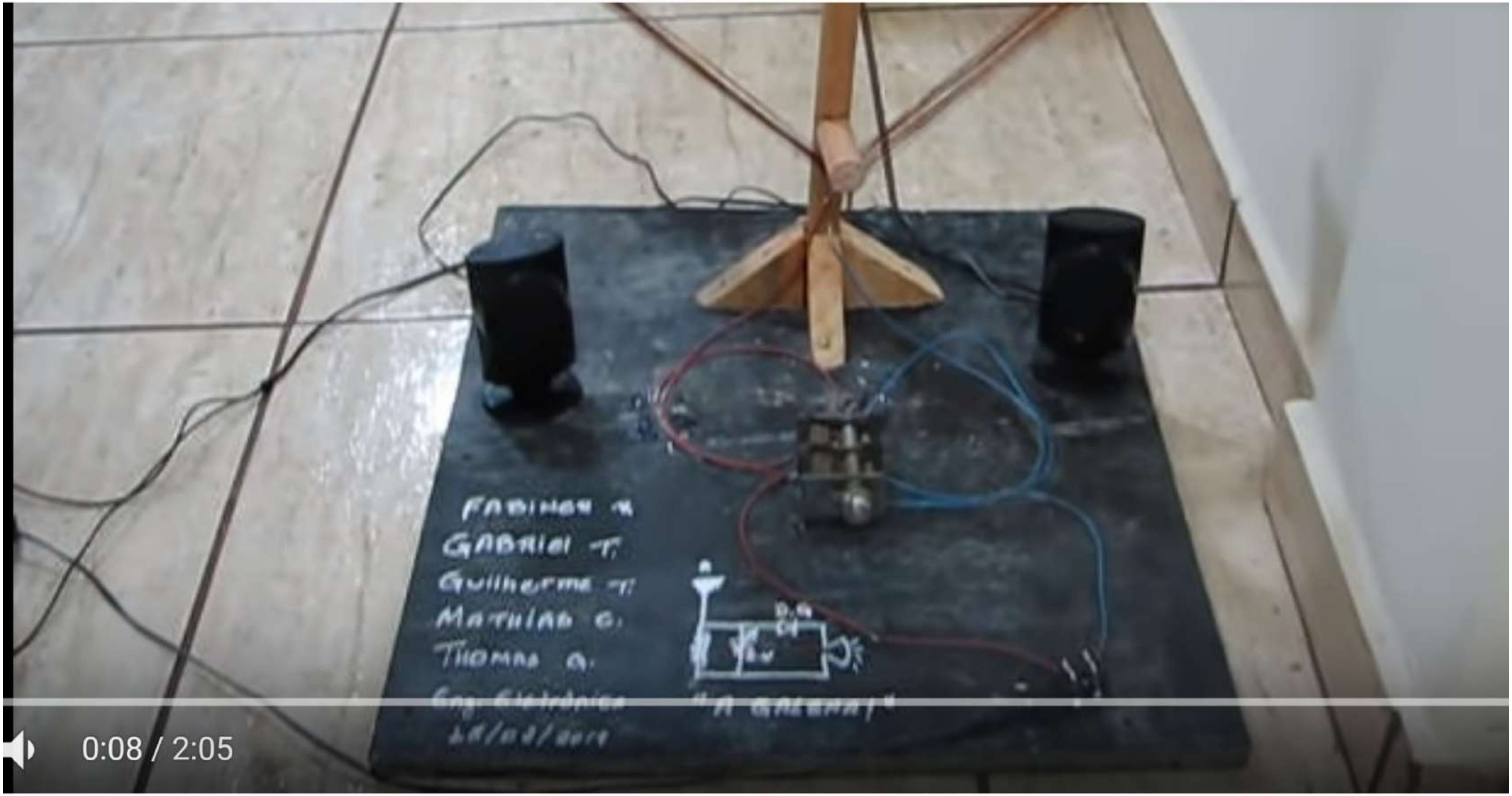



FABINER R.
GABRIEL T.
Guilherme T.
MATHIAS C.
THOMAS G.
Eng. Eletrônica
D.G
C.V
"A GALENA!"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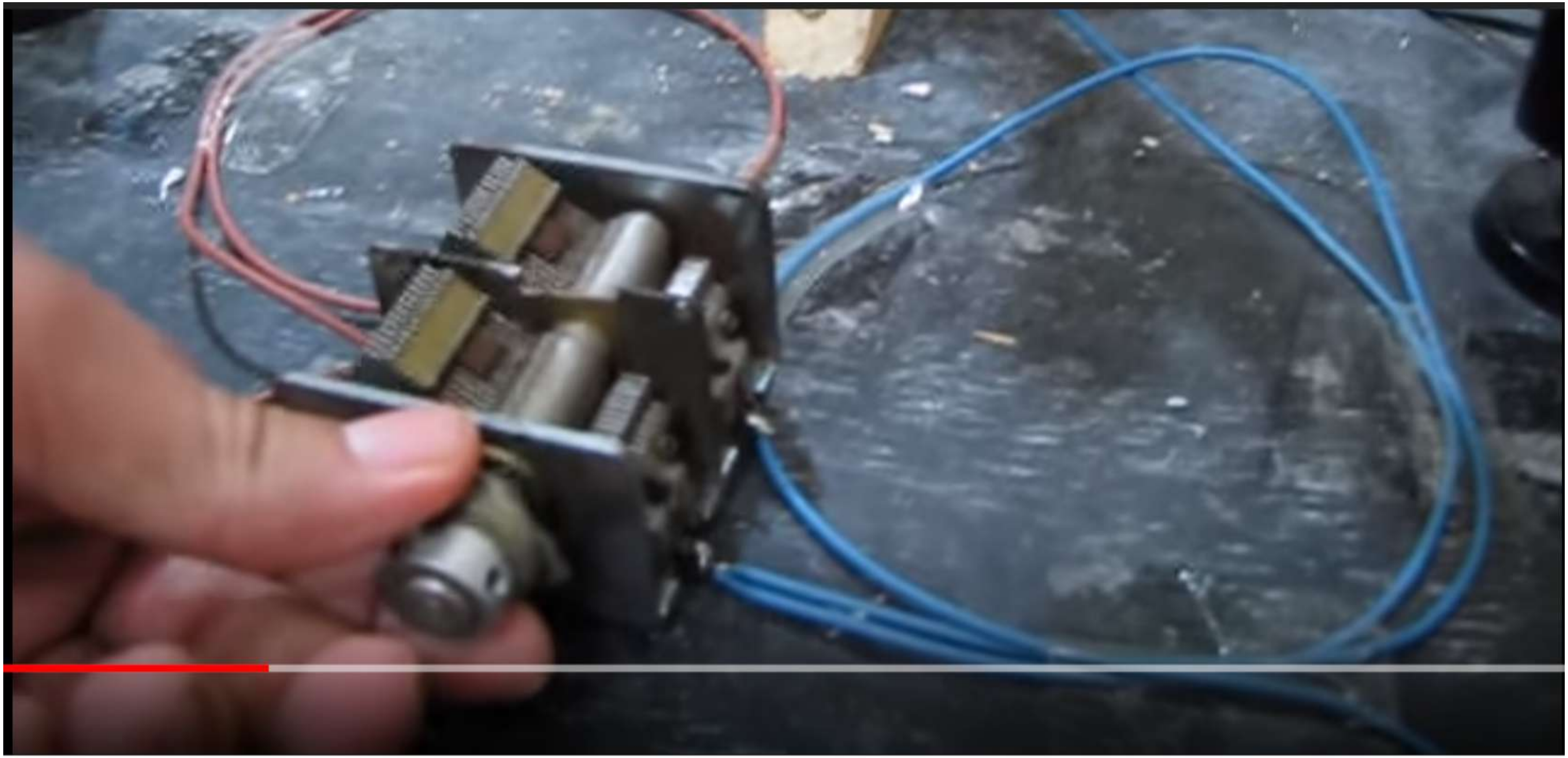
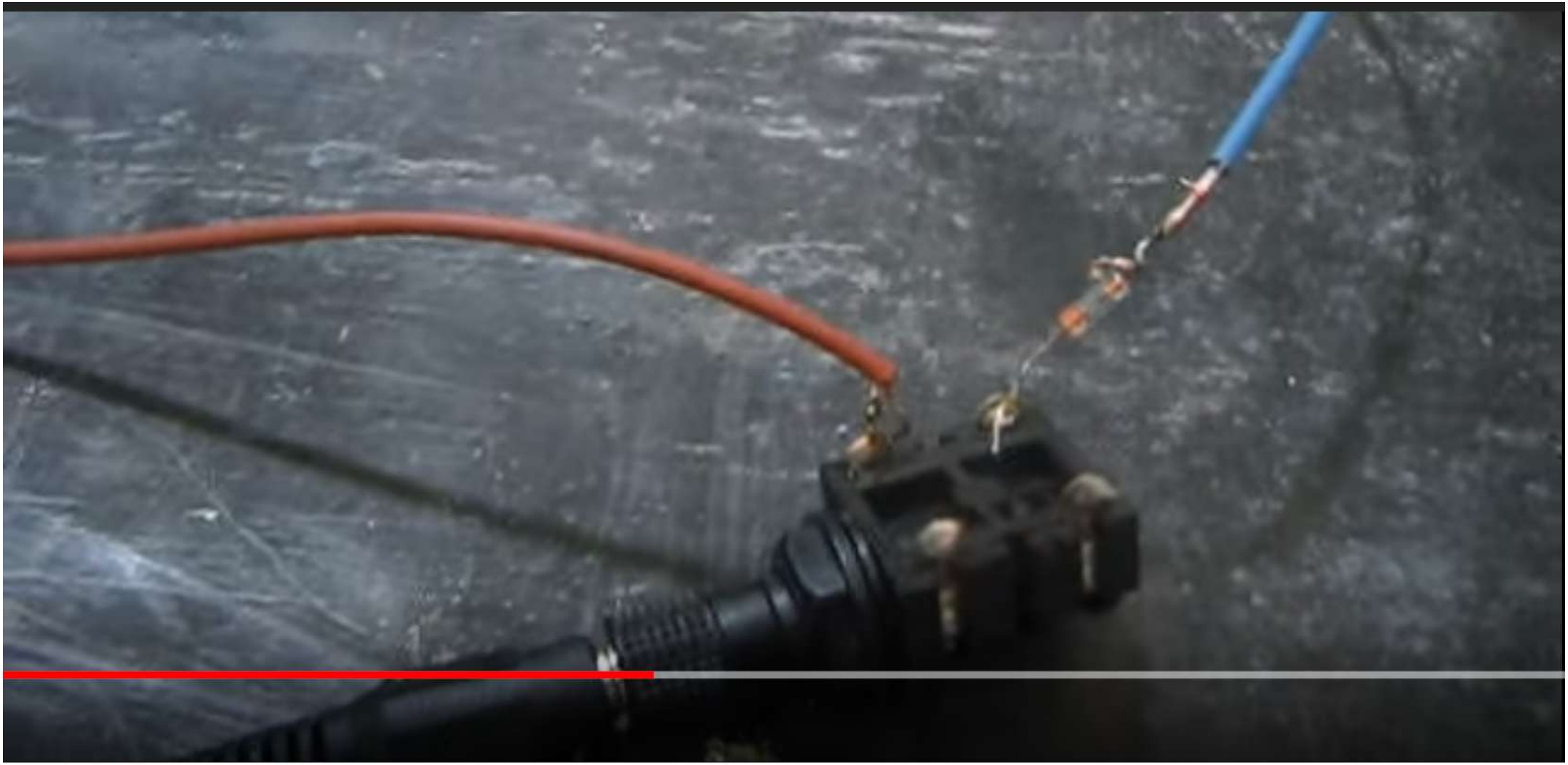
0:08 / 2:05





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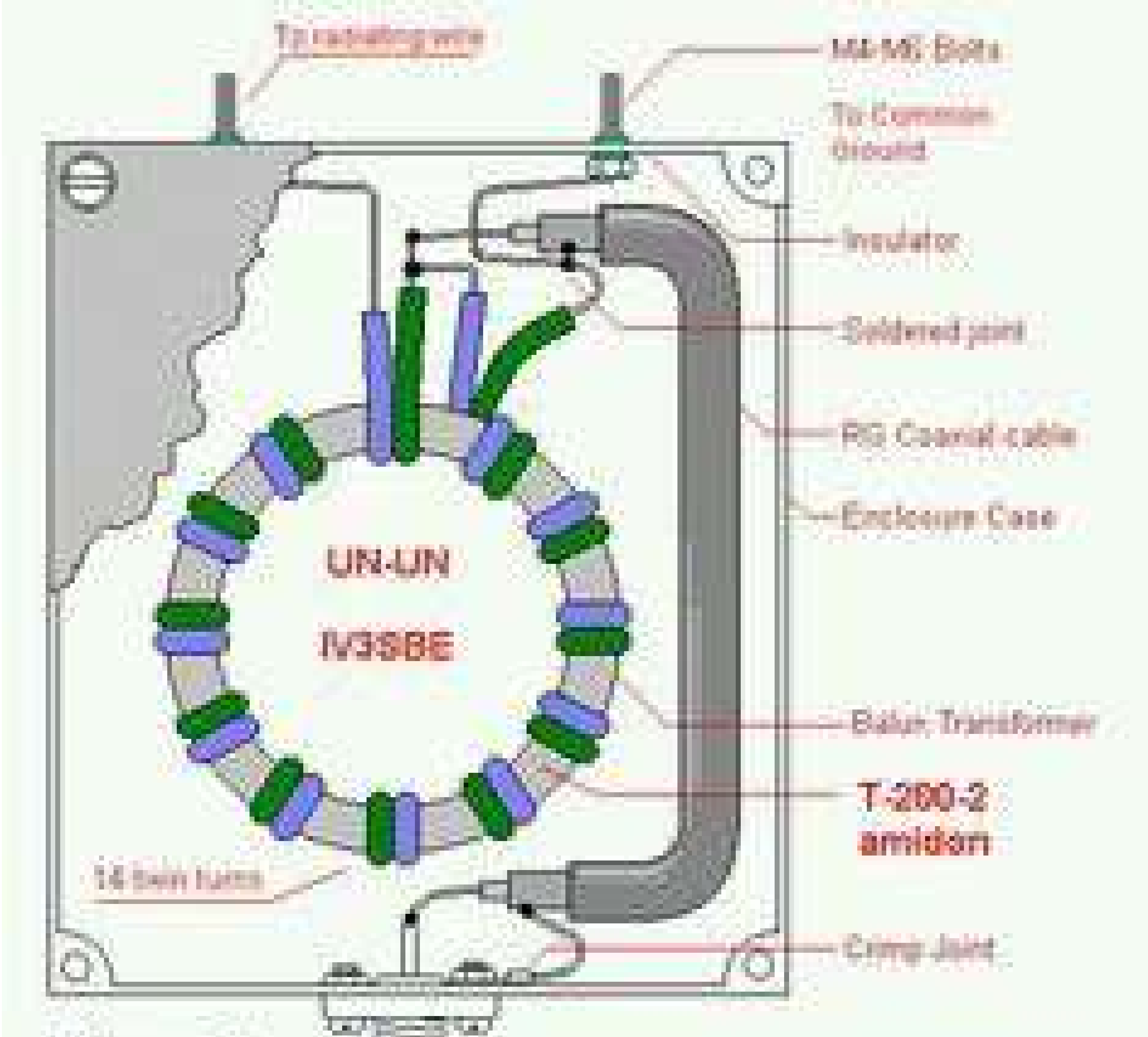
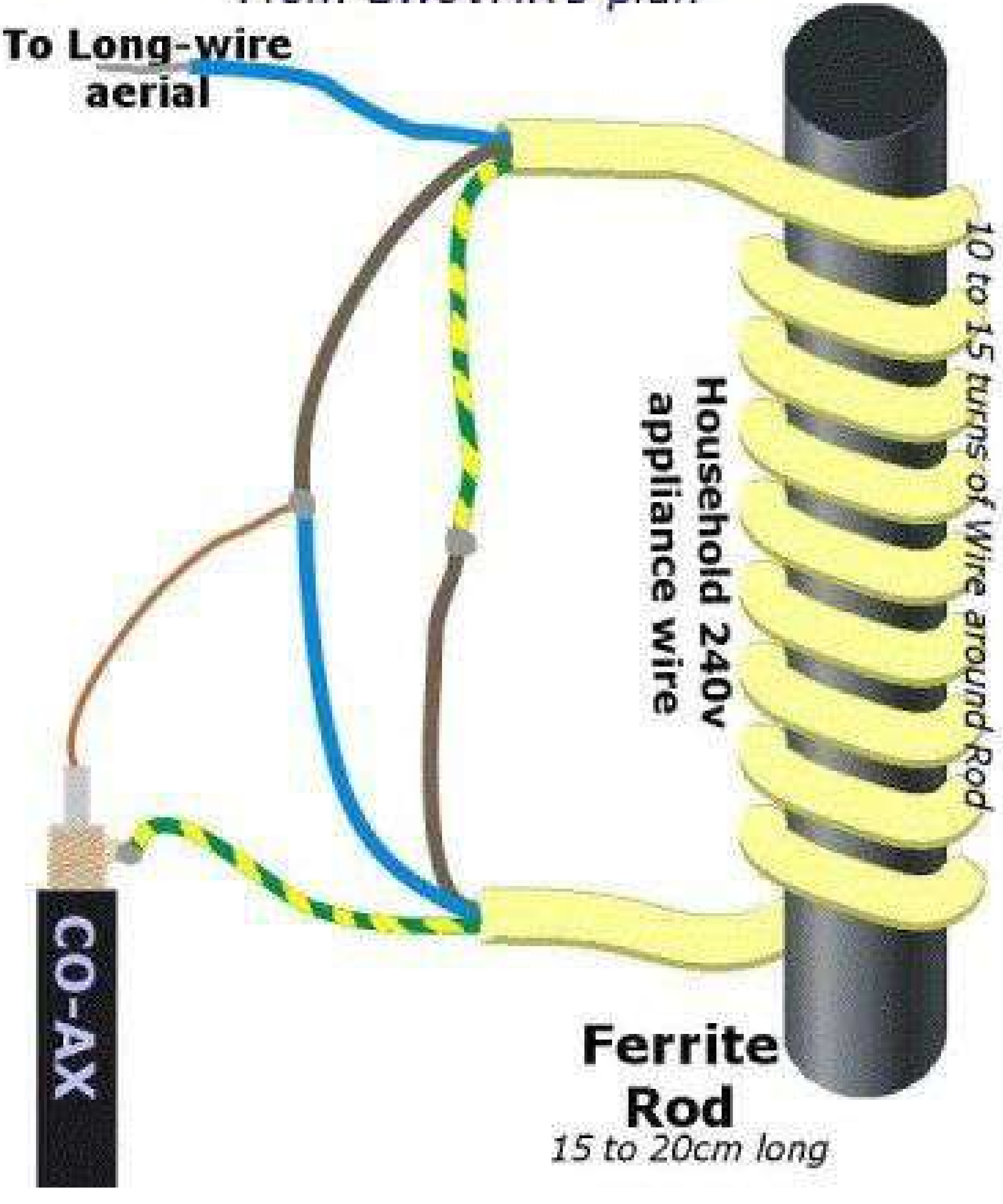
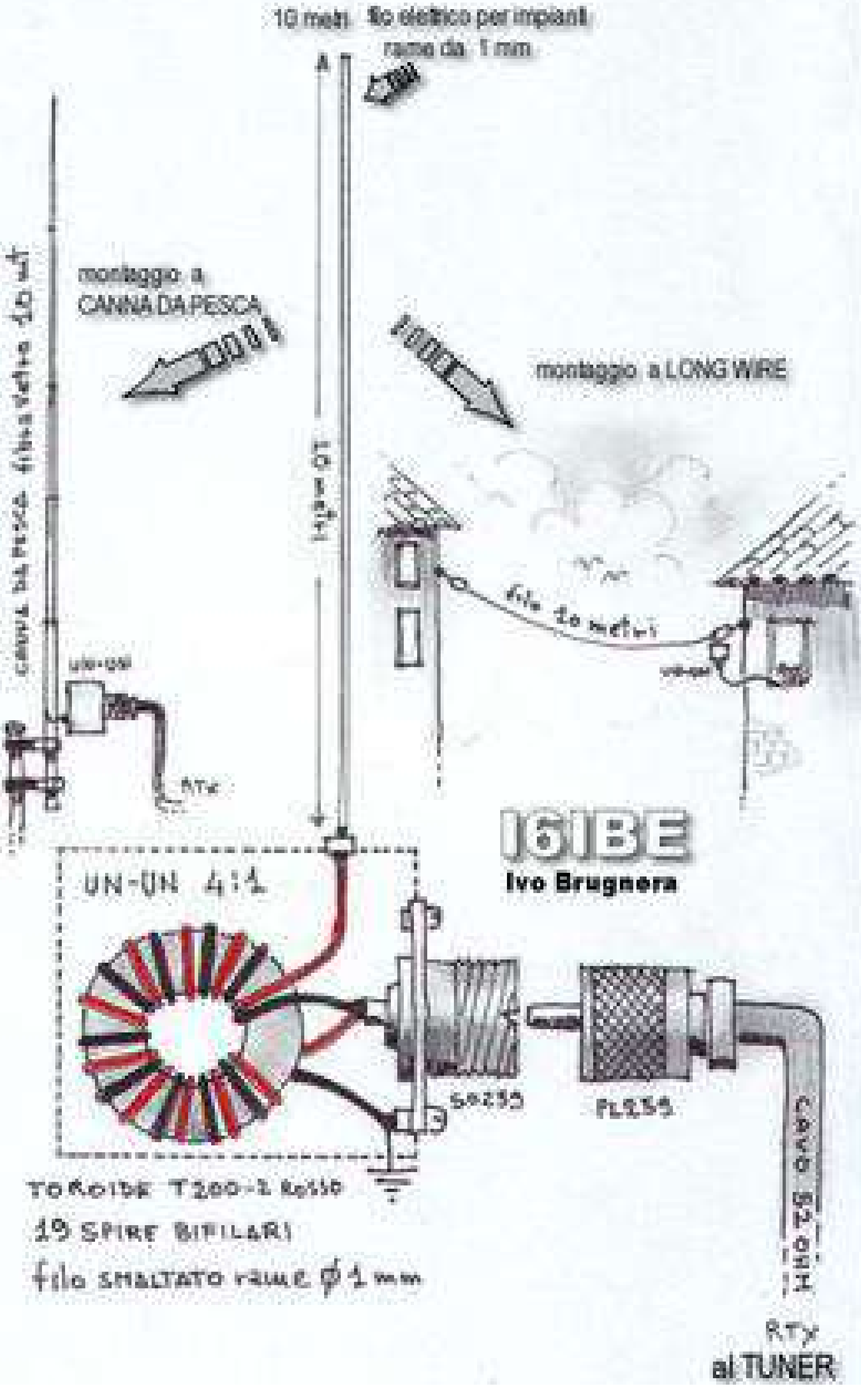

To radiating wire
M4-M6 Bolts
To Common Ground
Insulator
Soldered joint
RG Coaxial cable
Enclosure Case
UN-UN
IV3SBE
Balun Transformer
T-200-2
amidon
14 twin turns
Crimp Joint
SO-239 Chassis Mount

Figure 5

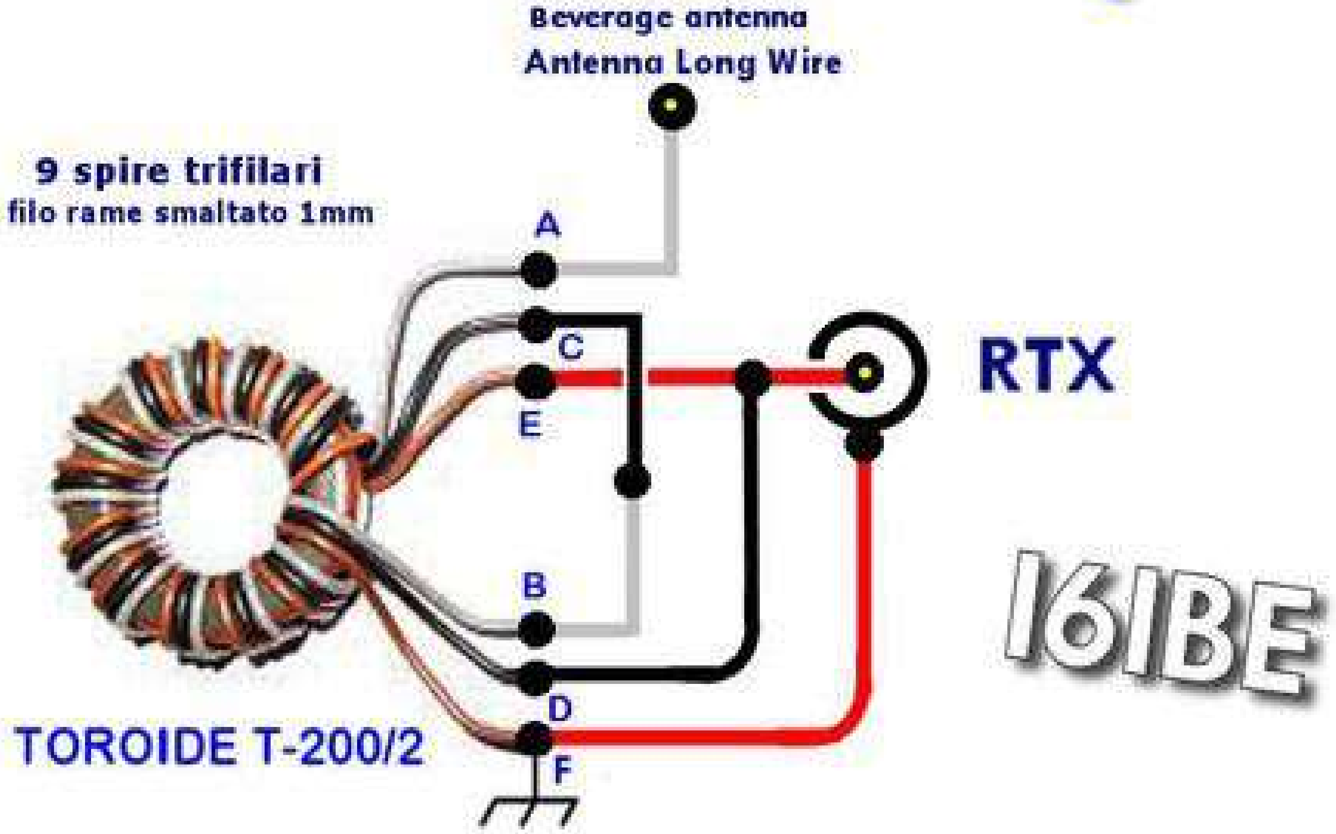
Voltage Balun / "Magnetic Balun"

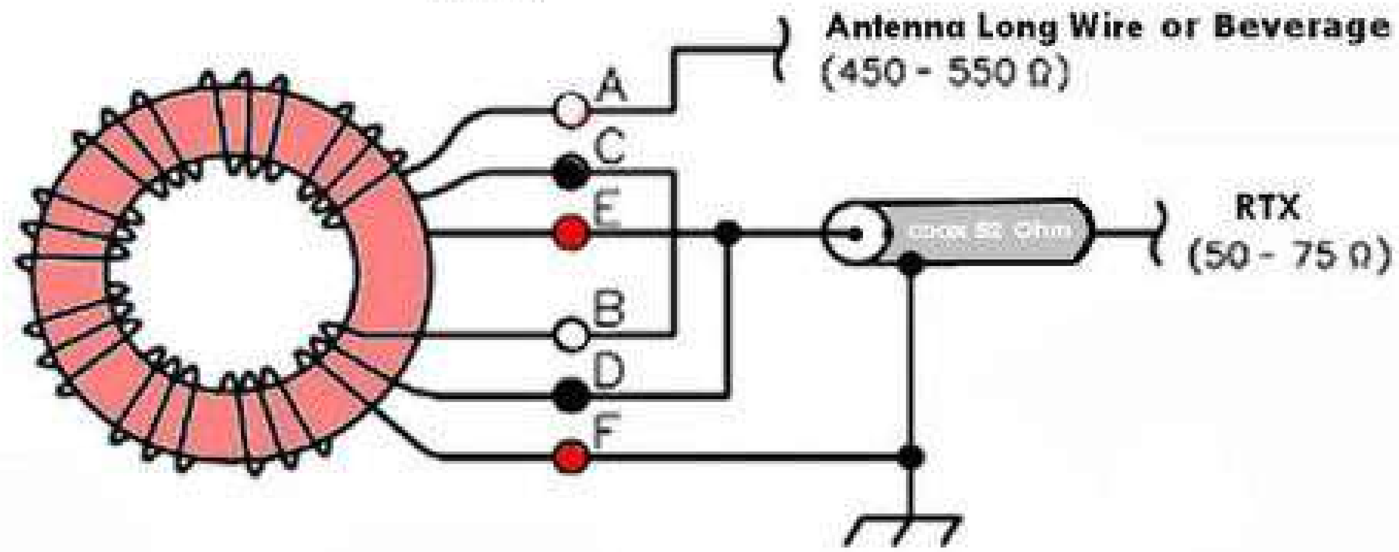
From GW0VMR's plan

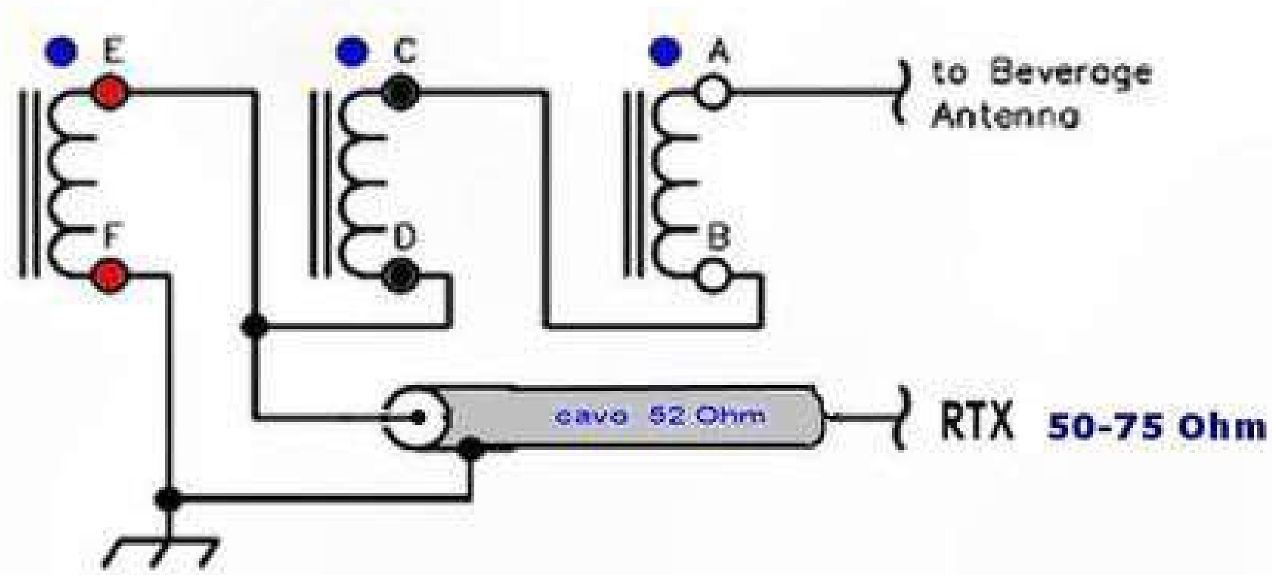



10 metri filo elettrico per impianti
rame da 1 mm
montaggio a
CANNA DA PESCA
montaggio a LONG WIRE
CANNA DA PESCA fibra vetro 10 mt
10 metri
filo 20 metri
RTX
I6IBE
Ivo Brugnera
UN-UN 4:1
SO239
PL259
CAVO 52 OHM
TOROIDE T200-2 ROSSO
19 SPIRE BIFILARI
filo SMALTATO RAME Ø 1 mm
RTX
al TUNER

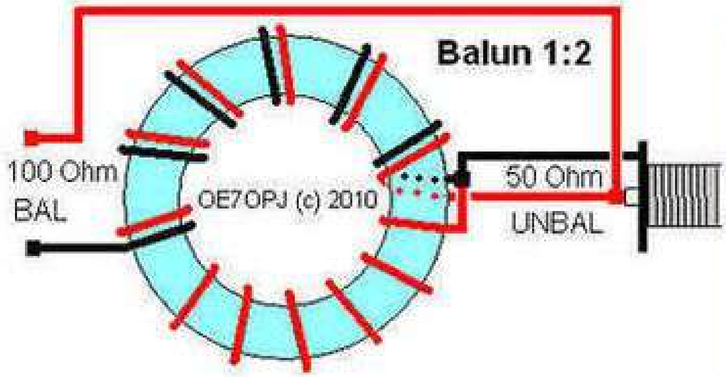
BALUN 9:1 Antenna Long Wire





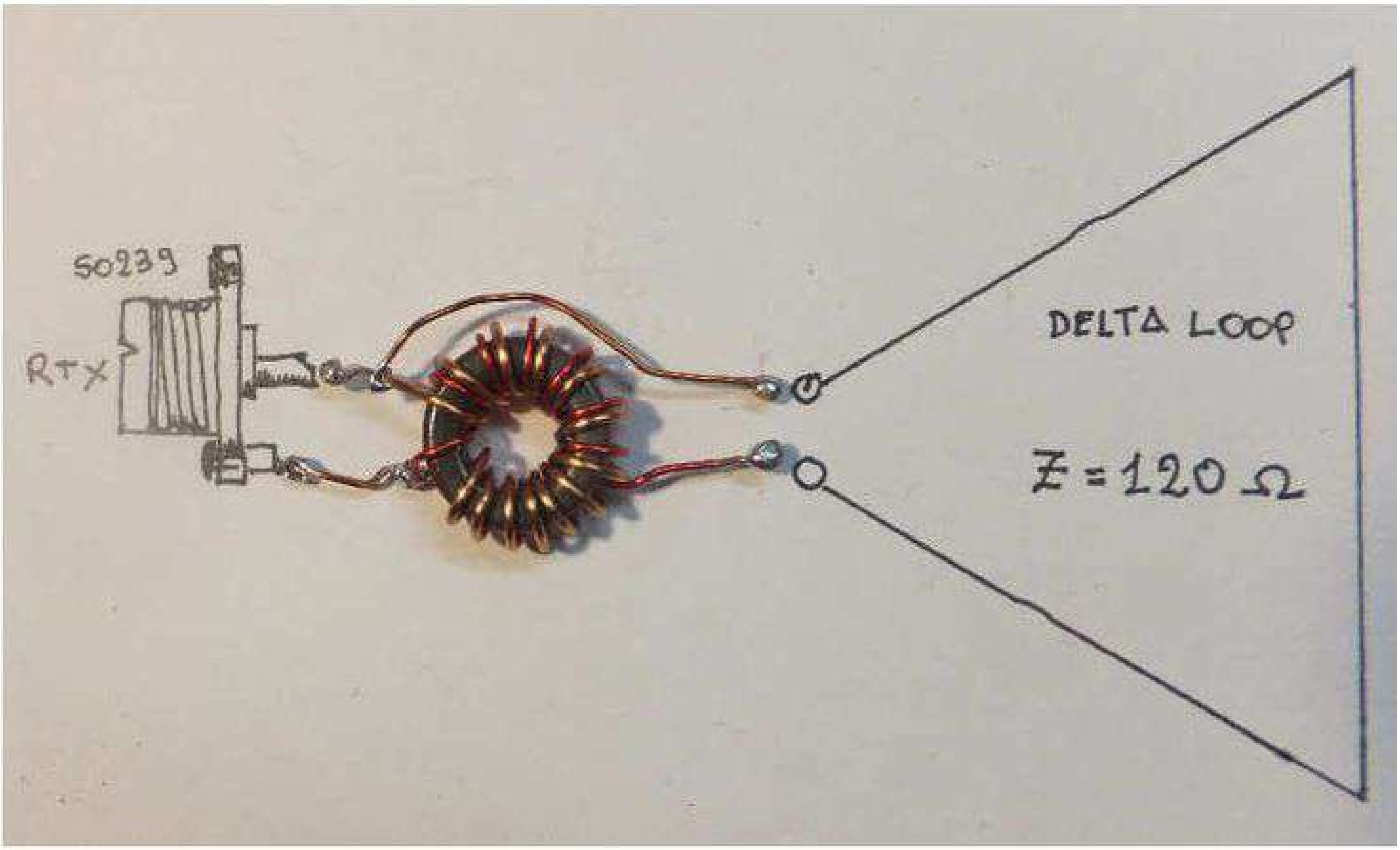


Bal-Un 2:1 per antenna DELTA-LOOP

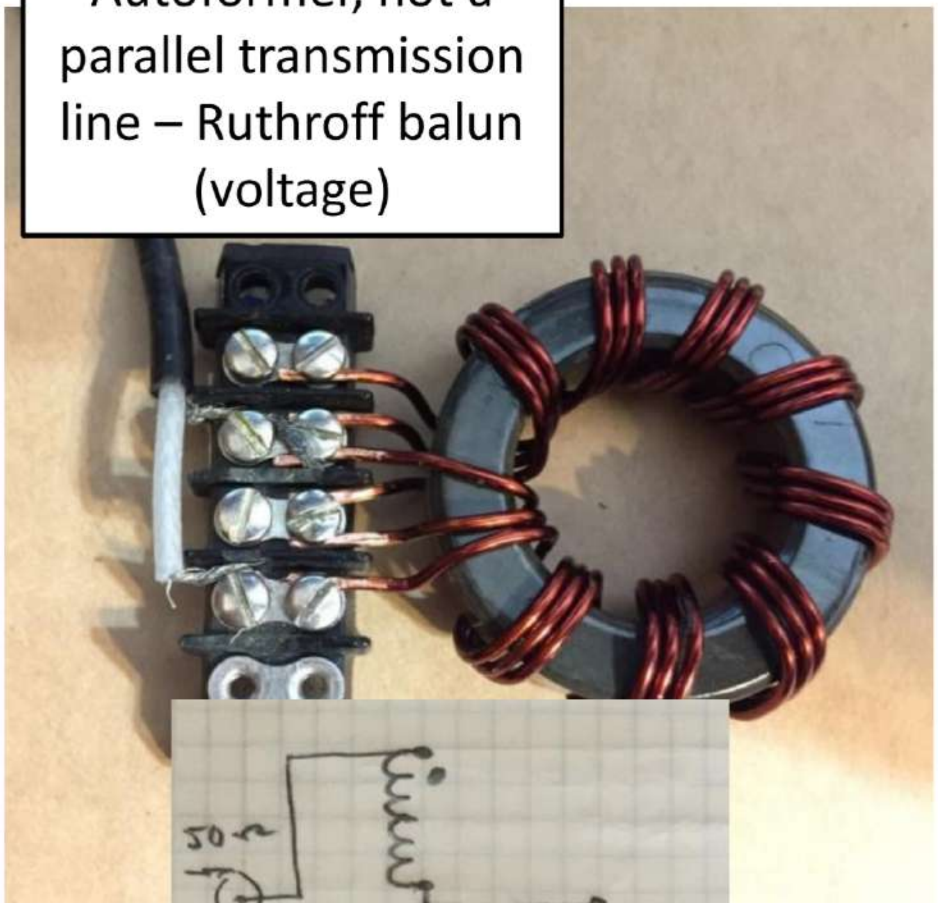


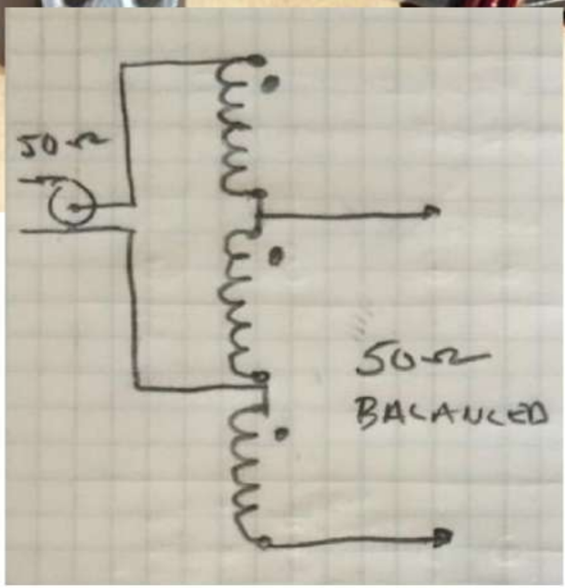
by OE7OPJ

Toroide	Numero di Spire	Potenza Supportata
T80-2	25	60 Watts
T106-2	16	100 Watts
T130-2	18	150 Watts
T157-2	16	250 Watts
T200-2	17	400 Watts
T200A-2	13	400 Watts
T400-2	14	1000 Watts



Autoformer, not a parallel transmission line – Ruthroff balun (voltage)

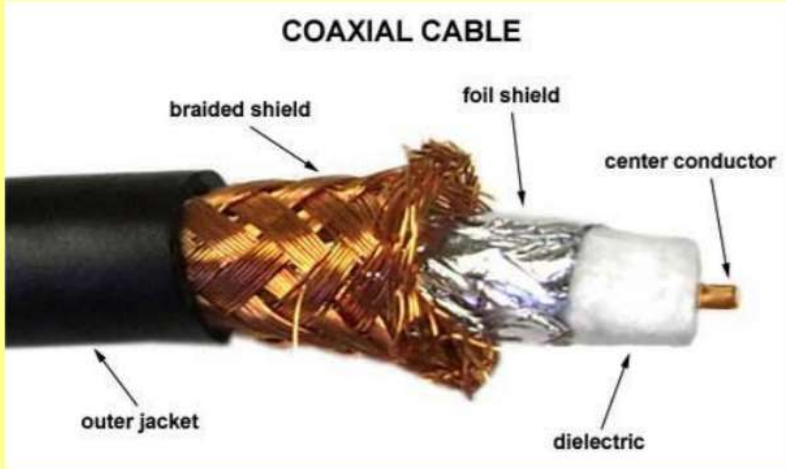




One or more parallel transmission lines, connected various ways – Guanella balun (current) – core is used solely for choking action

F/B: 0.00 dB; Rear: Azim. 120 deg, Elev. 60 deg

Coax is unbalanced …..

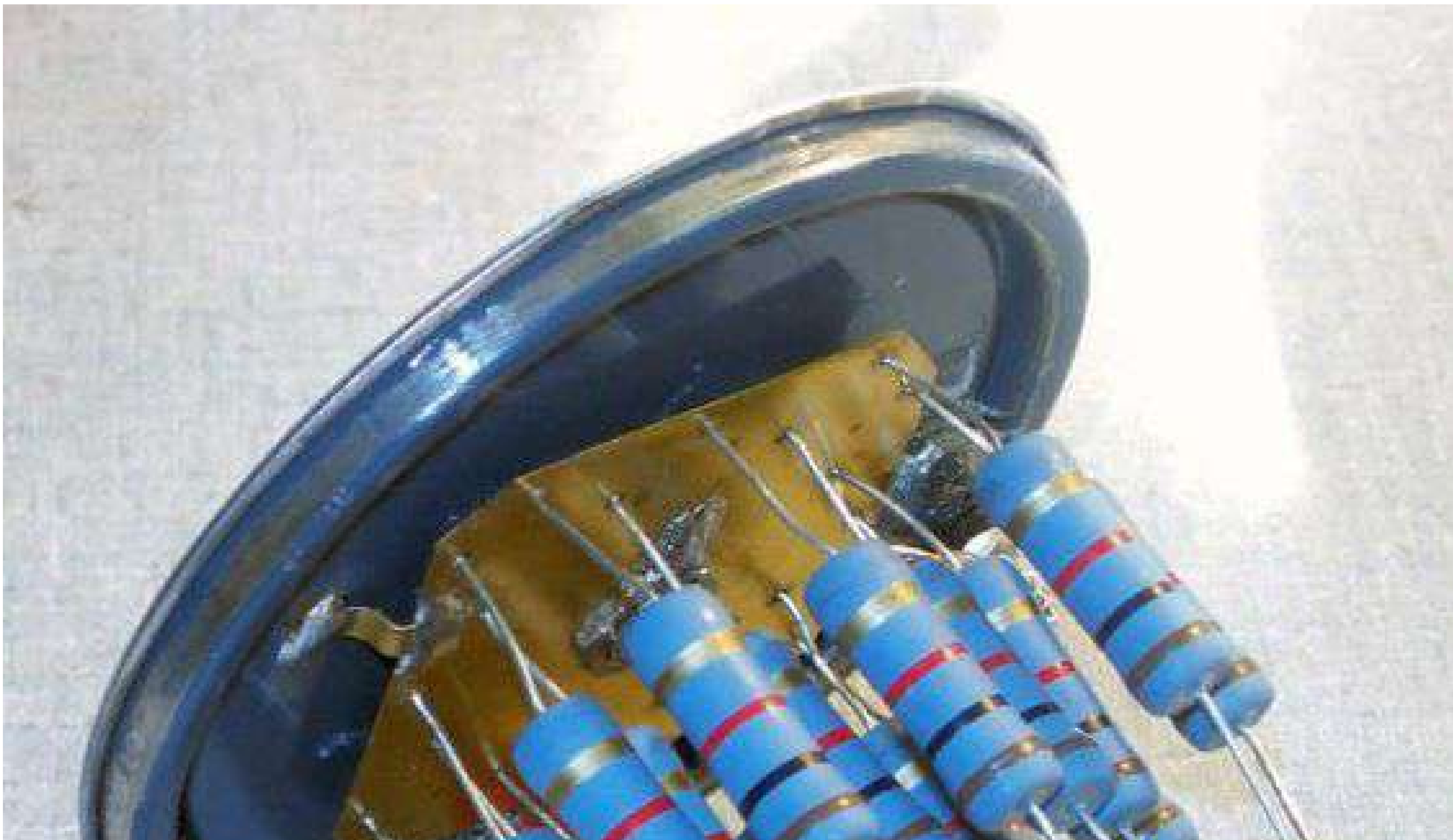


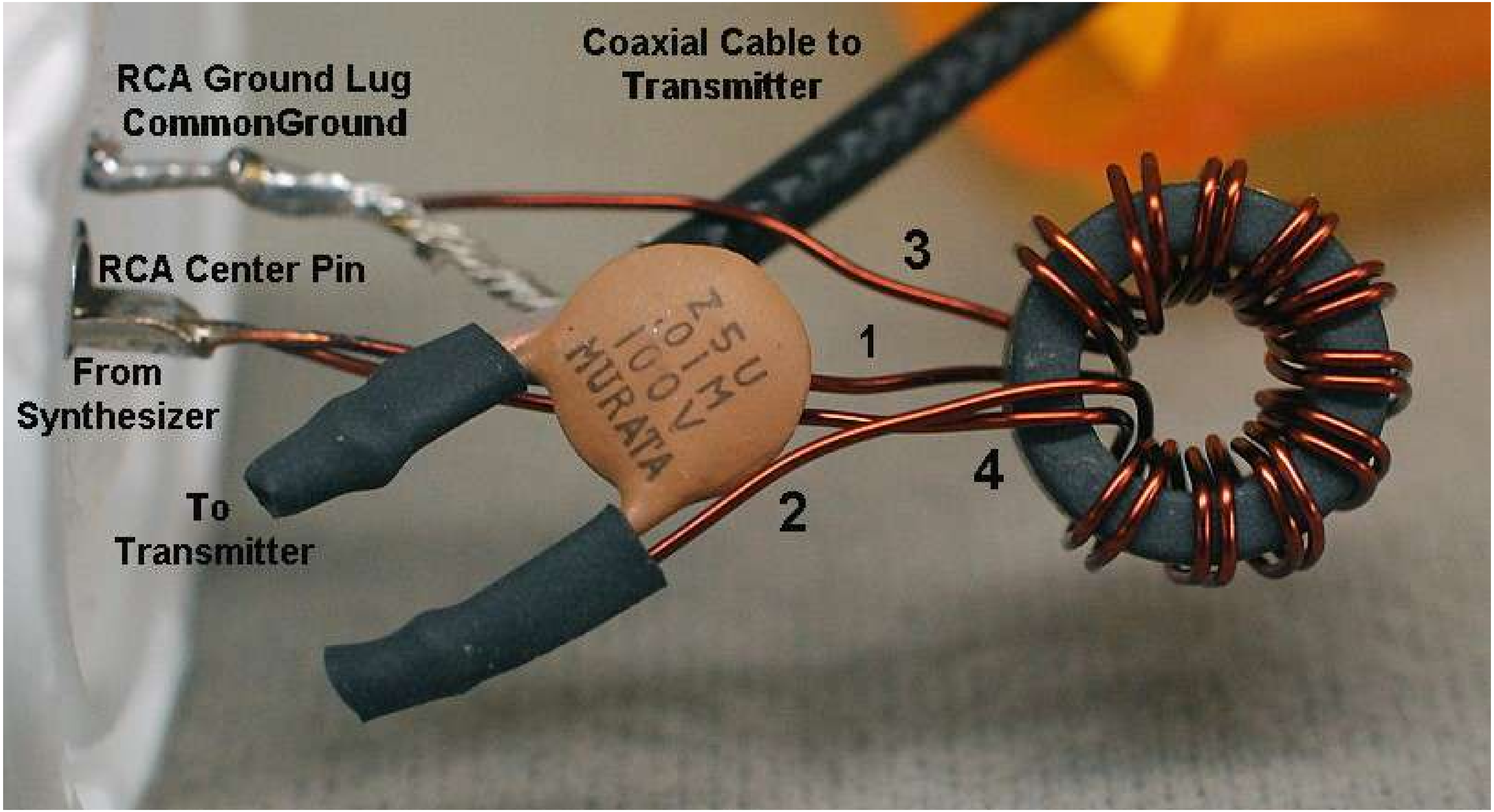
… Ladder line is balanced

Coax is unbalanced, while ladder line and open wire feeder is balanced, as long as it is used properly and is kept away from metal and "earthy" materials

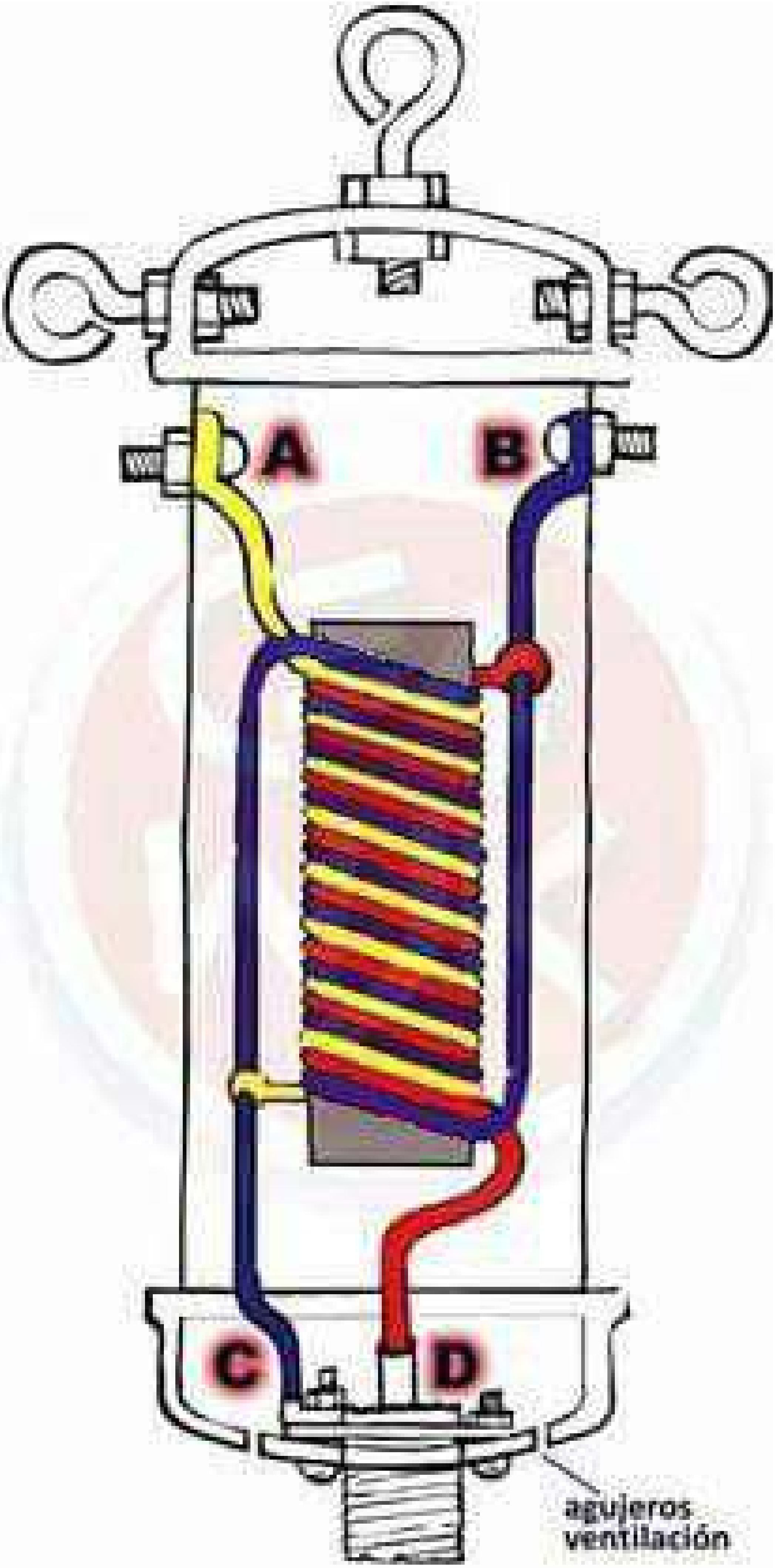
Convert parallel feedline to coax

Types of Parallel Line
- **Open Feeder** or **Ladder line**
  - Typ 450 and 600 ohm
- **Twin Lead**
  - Common for (old) outdoor TV antennas
- **Window line**
  - Commonly available today

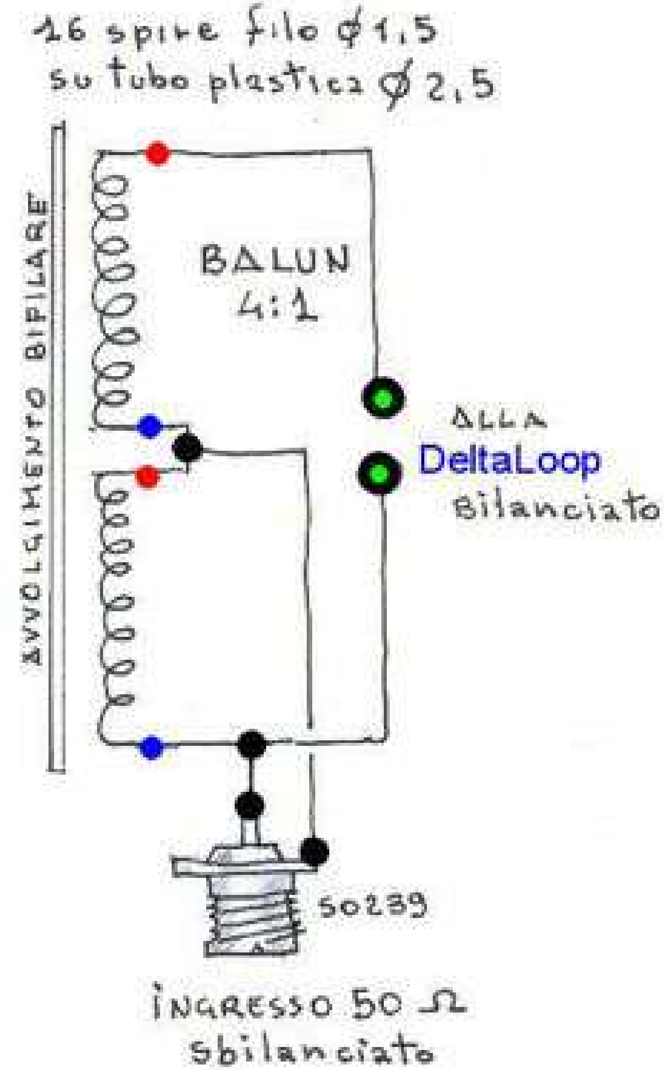


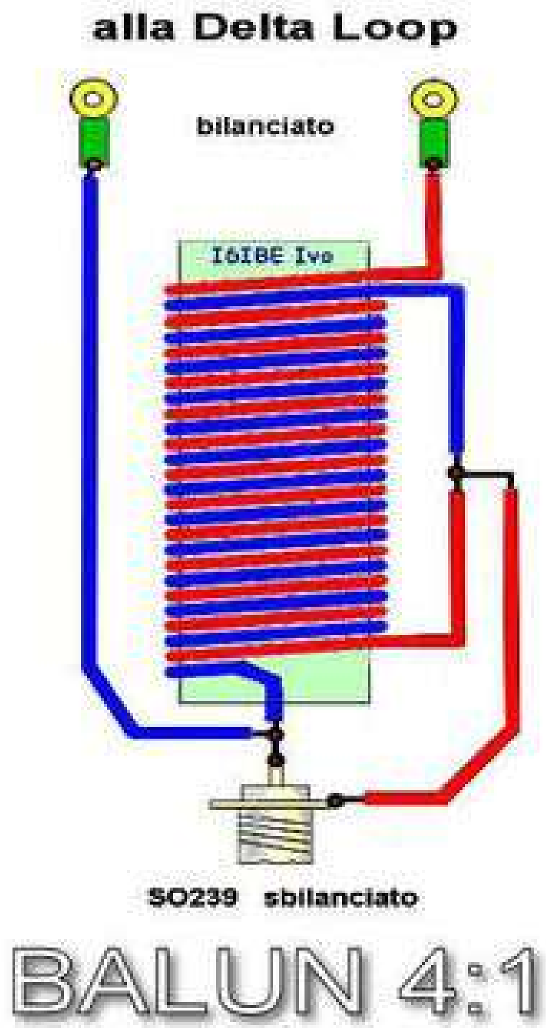


Coaxial Cable to
Transmitter
RCA Ground Lug
CommonGround
RCA Center Pin
From
Synthesizer
To
Transmitter
3
1
4
2
Z5U
.01M
100V
MURATA


A
B
C
D
agujeros
ventilación

Formula LUNGHEZZA DELTA LOOP	Esempio 14.00 MHz (20 metri)	Lunghezza TOTALE del LOOP
Velocita'Luce : Freq MHz x 0.97= L	**299.8** VL : **14.100** MHz x **0,97**	**20.624** metri totale loop
$L = \frac{300.000}{MHz} \times 0.97$	I6IBE	
Formula LUNGHEZZA Stub coax 75 Ohm	Esempio 14.00 MHz (20 metri)	Lunghezza TOTALE cavo 75 Ohm
Lunghezza LOOP x 0.66 : 4	**20.624** x **0.66** : **4**	**3.402** Metri coax RG-59






I6IBE
Choke RFI
toroide
cavo RG-58
5+5 spire
controfase
BOCCHETTONE
INGRESSO ANTENNA
SO-239

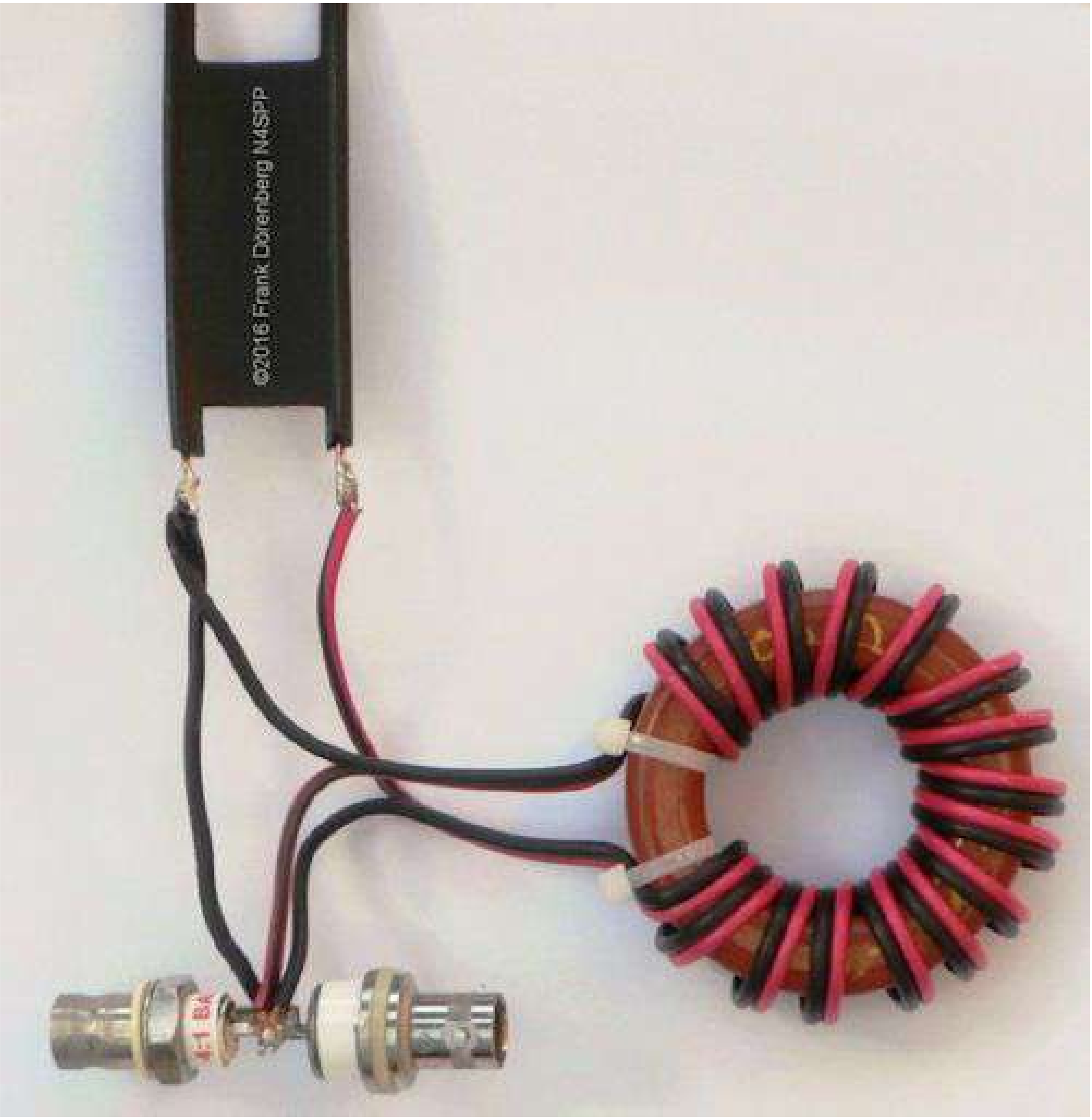
2. Insert metal electrodes and attach multimeter leads [copper (+), aluminum (-)] For measuring direct current voltage: set multimeter function switch to "DCV: 20" take a reading in volts DC. for measuring direct current: set multimeter function switch to "DCA: 20m" take a reading in milliamps (mA) DC.

Lawn battery (summer). INSET: Marsh mud battery. (Circles show position of electrodes.)

Calculating Earth Battery Power (W = I * V)

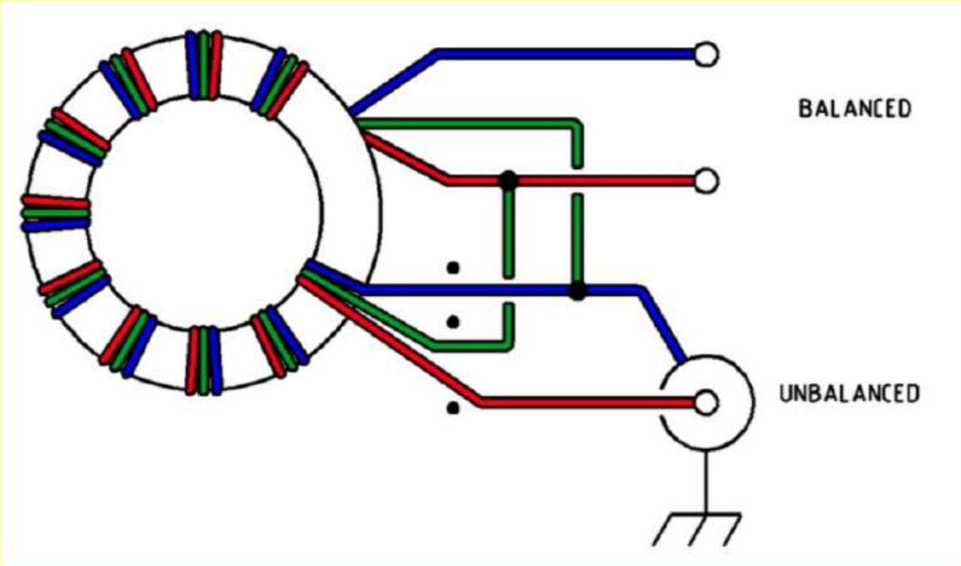
EXAMPLE: A lawn battery in late summer (little rain) produces a 0.65V, 0.2mA current. A battery power calculation of 0.00013W (0.13mW).

Powered by:


©2016 Frank Dorenberg N4SPP

F/B: 0.00 dB; Rear: Azim. 120 deg, Elev. 60 deg

1:1 Ruthroff Voltage Balun



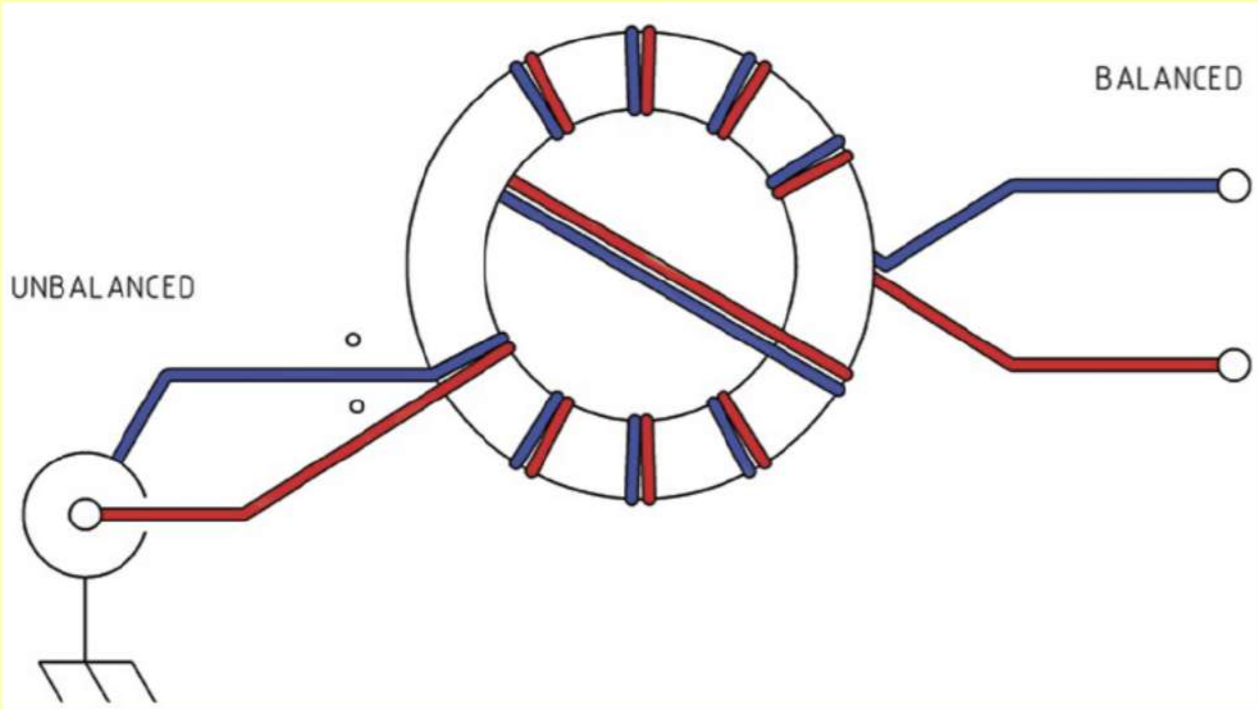
* 450 Ohm ladderline

Steve Nichols G0KYA

The Ruthroff or voltage balun is another type. Voltage baluns balance the voltages. Current balance is considered to be superior to voltage balance. Voltage baluns should not be used in lines with high SWR. They have the narrowest impedance and frequency range of any balun type. Properly designed voltage baluns have low common mode impedance. Properly designed current baluns have high common mode impedance, and provide better balance. If you want to stop common mode currents flowing on your coax a current balun is a better choice. But in the Carolina Windom, which uses the vertical coax as a radiator you WANT common mode currents, so a Ruthroff voltage balun is better.

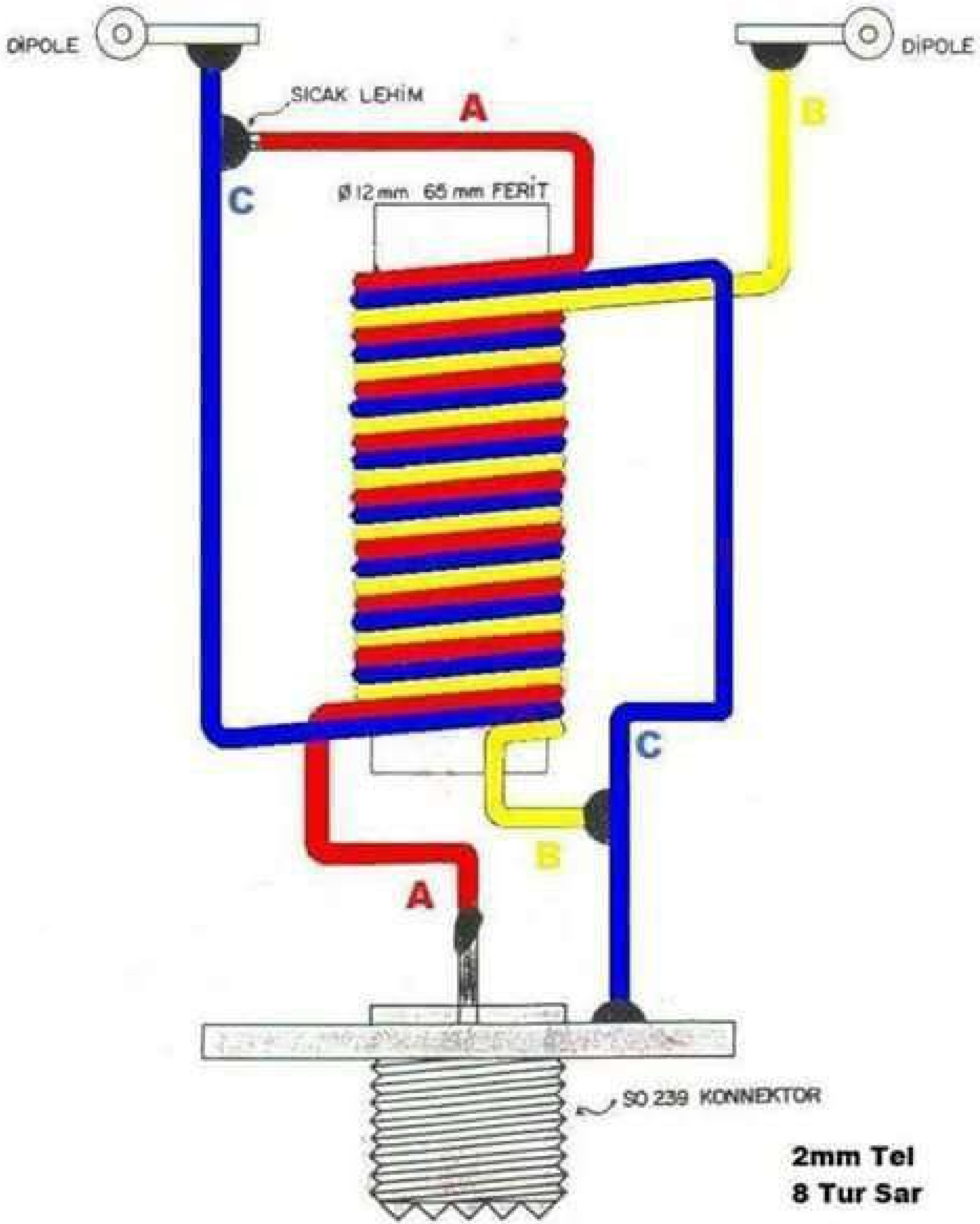
F/B: 0.00 dB; Rear: Azim. 120 deg, Elev. 60 deg

1:1 Guanella current balun



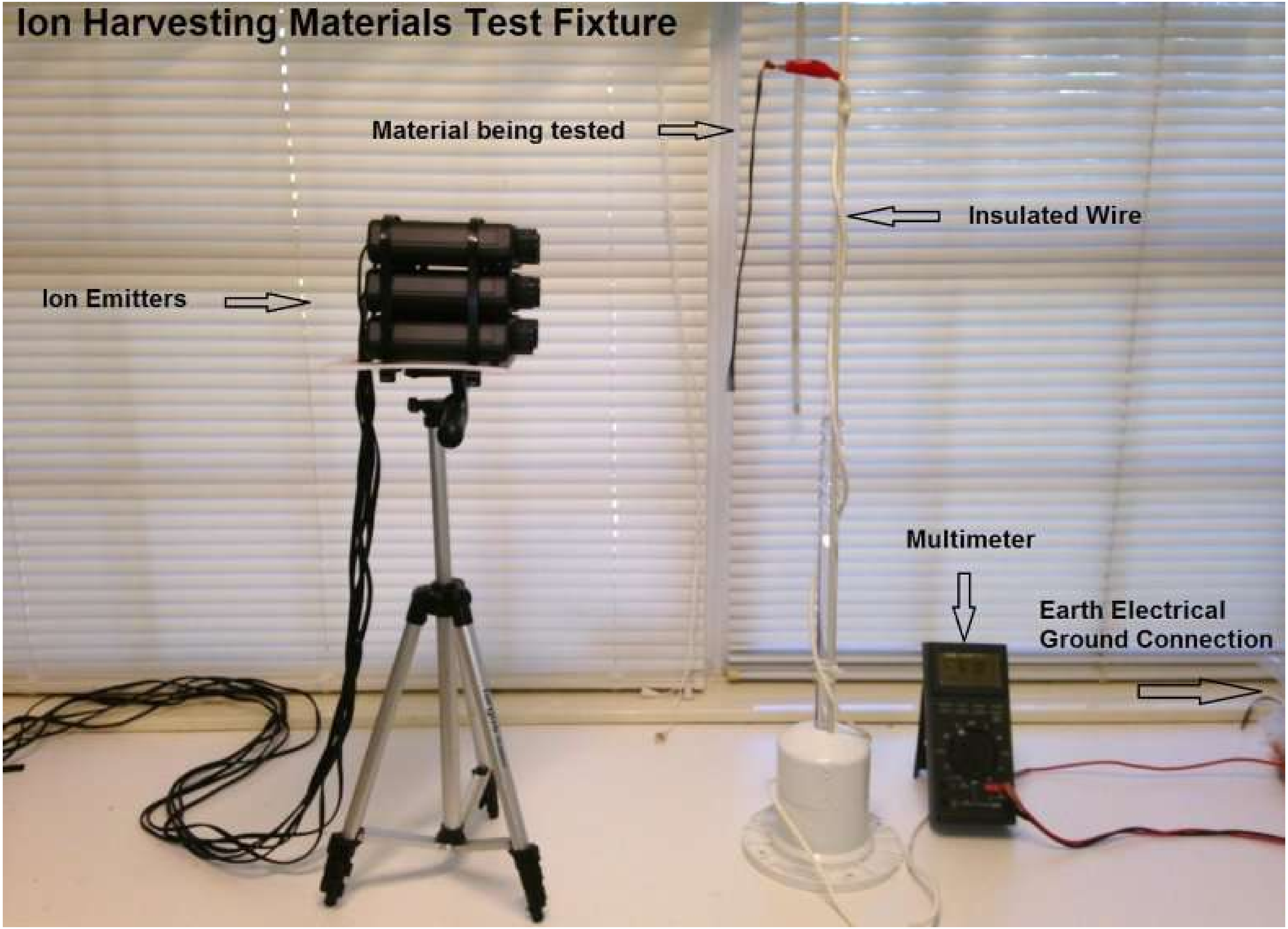
* 450 Ohm ladderline

A Guanella or current balun is very common. Current baluns stop RF from coming back down the outside of the coax shield, and are so called that because they "force equal currents in each side of a dipole"

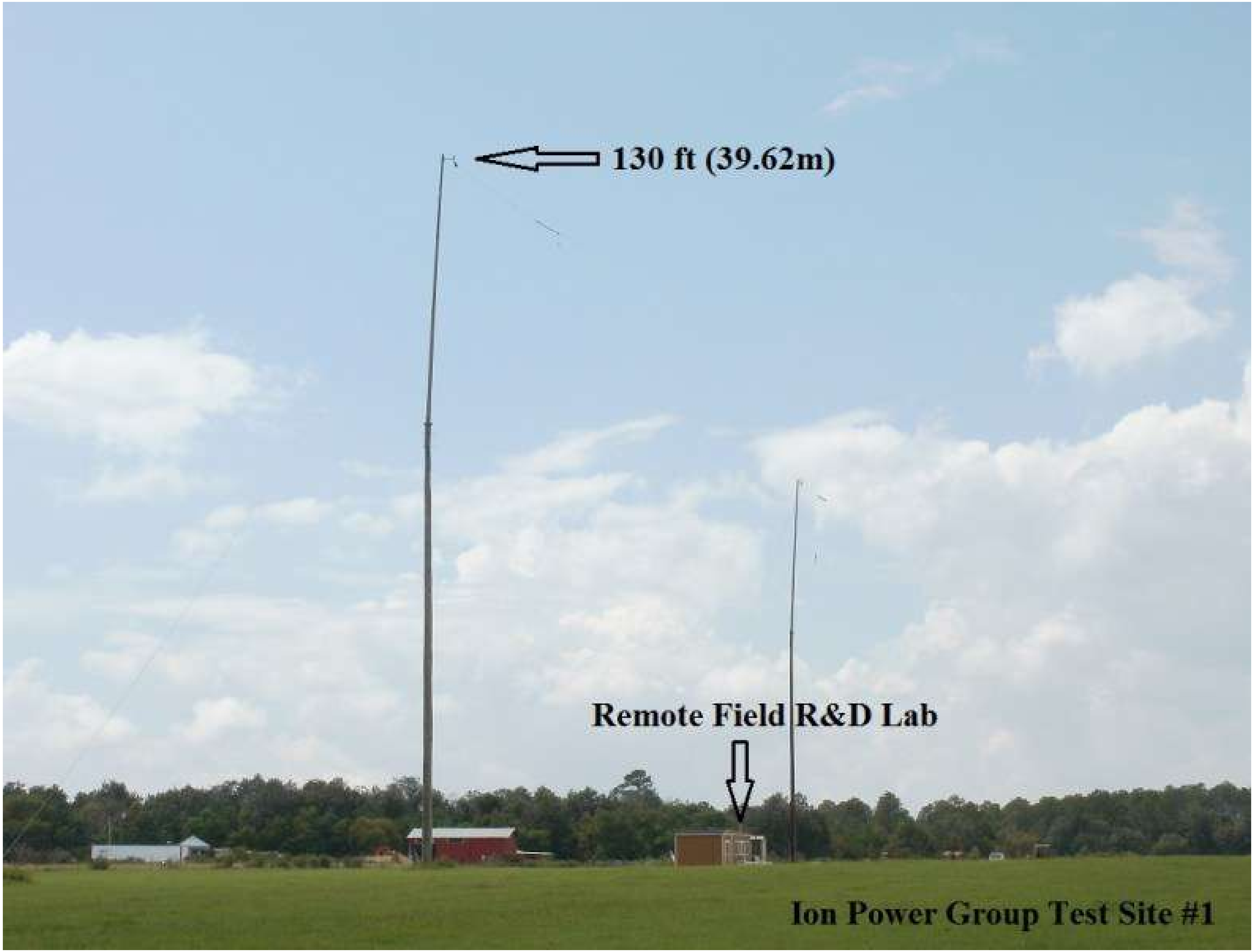


2mm Tel
8 Tur Sar


© Azega.com

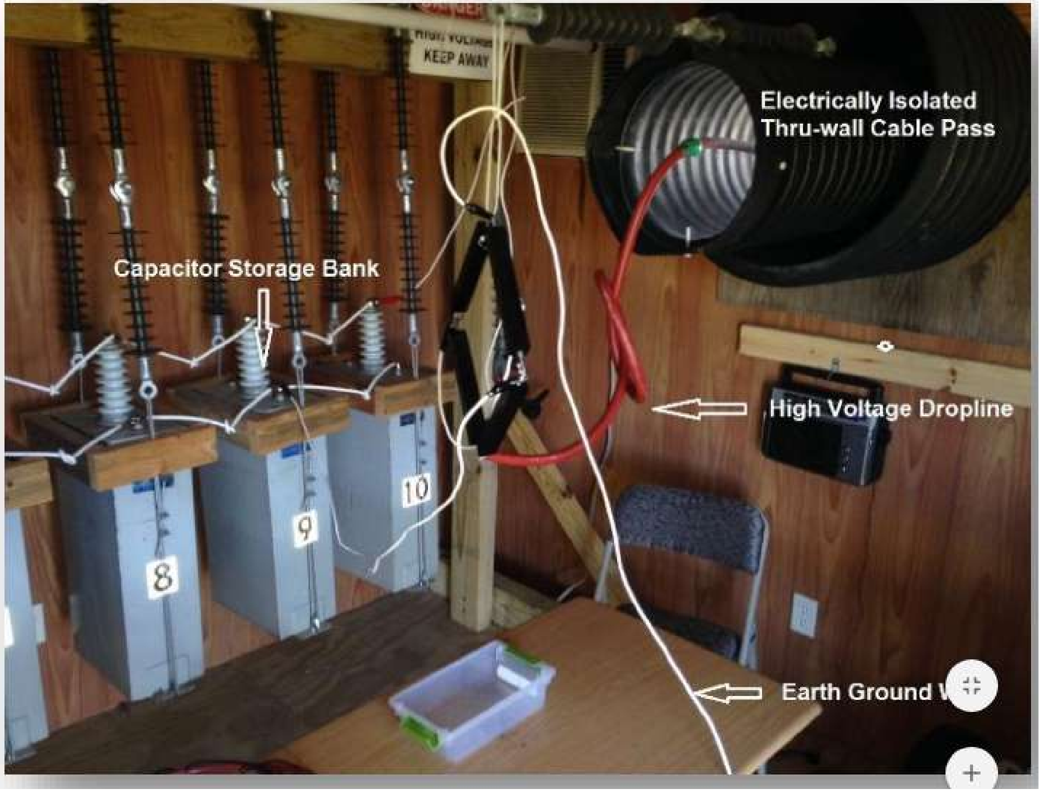


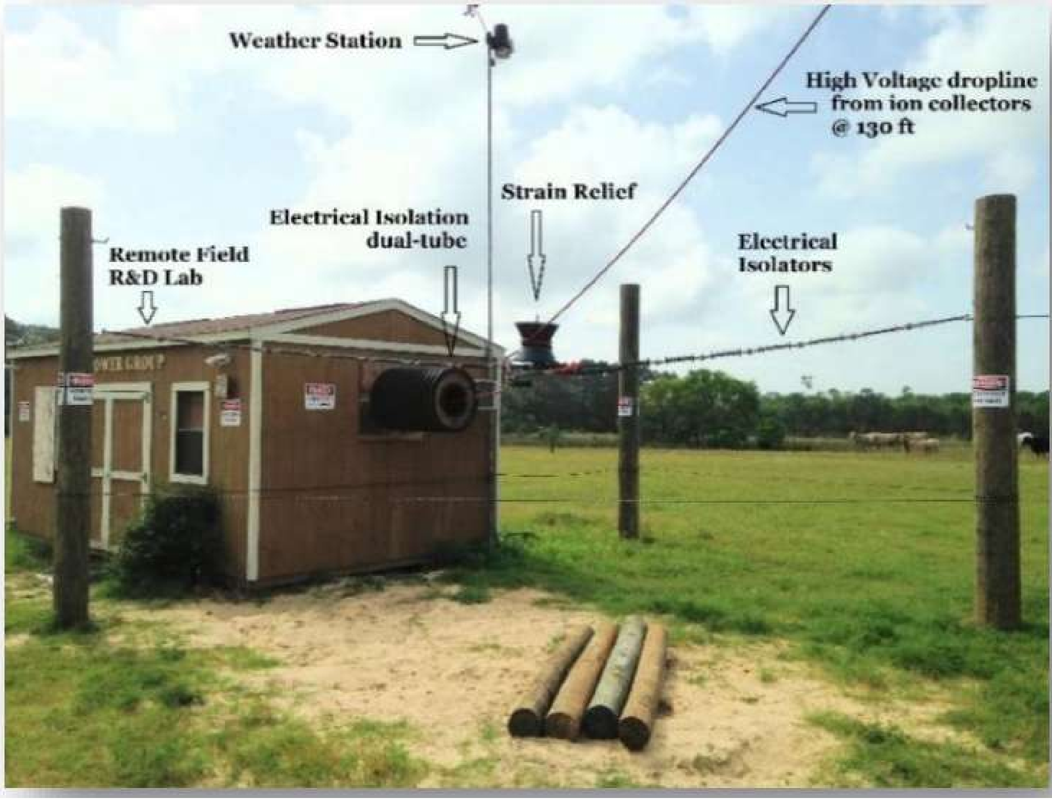
Ion Harvesting Materials Test Fixture
Material being tested
Insulated Wire
Ion Emitters
Multimeter
Earth Electrical
Ground Connection

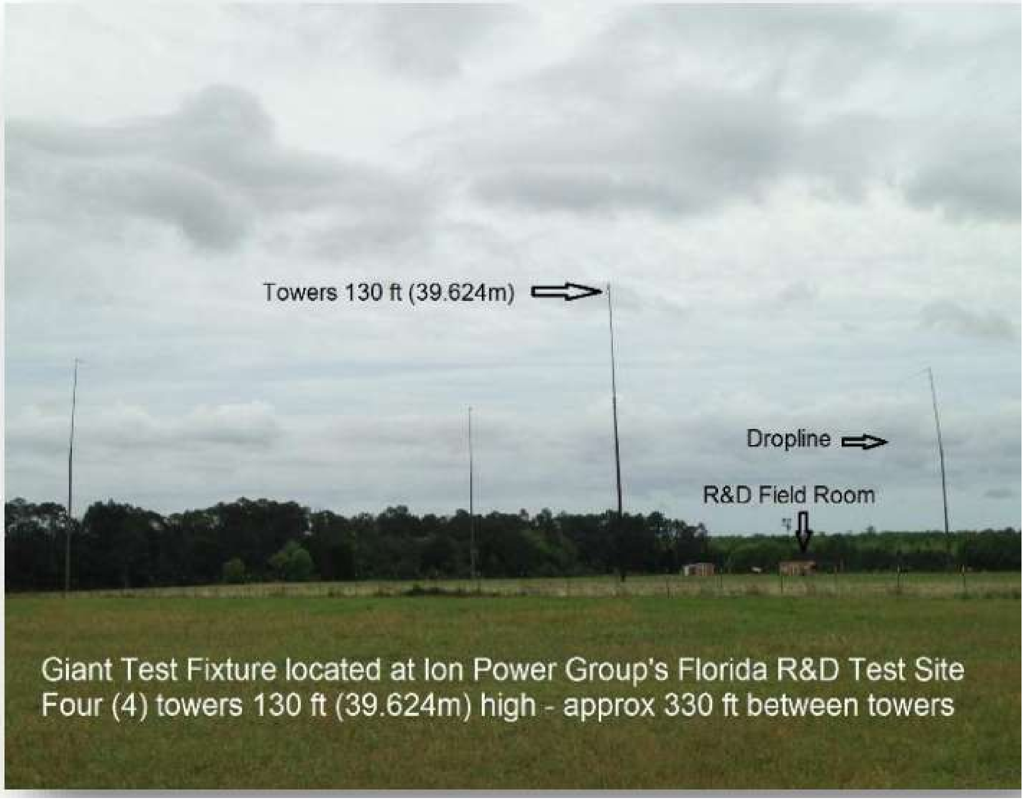

130 ft (39.62m)
Remote Field R&D Lab
Ion Power Group Test Site #1

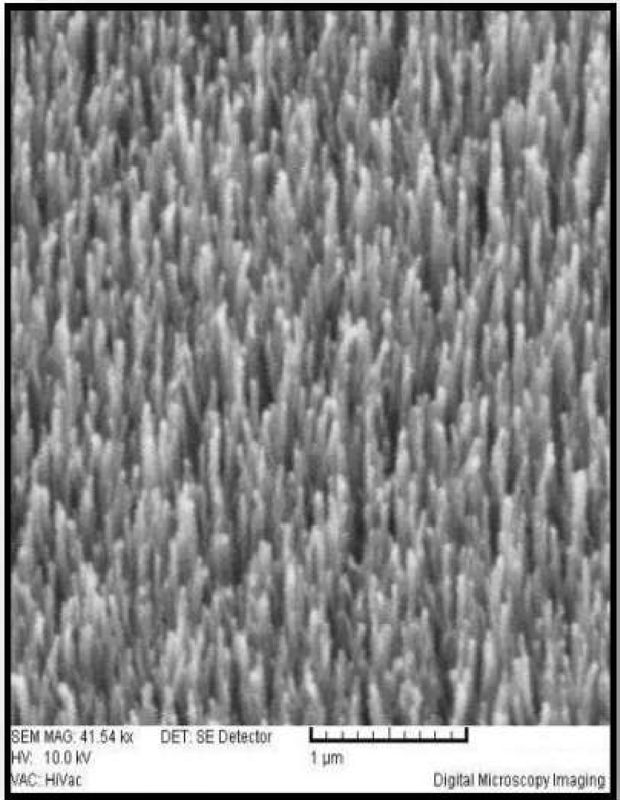

1
2
3
4
5
6
7
8
9
10


Ion Harvesting Electrical Storage
(10) General Electric capacitors in parallel
rated at 41.kV totaling 75.uf capacity


Electrically Isolated
Thru-wall Cable Pass
Capacitor Storage Bank
High Voltage Dropline
Earth Ground


Weather Station
High Voltage dropline
from ion collectors
@ 130 ft
Strain Relief
Electrical Isolation
dual-tube
Remote Field
R&D Lab
Electrical
Isolators

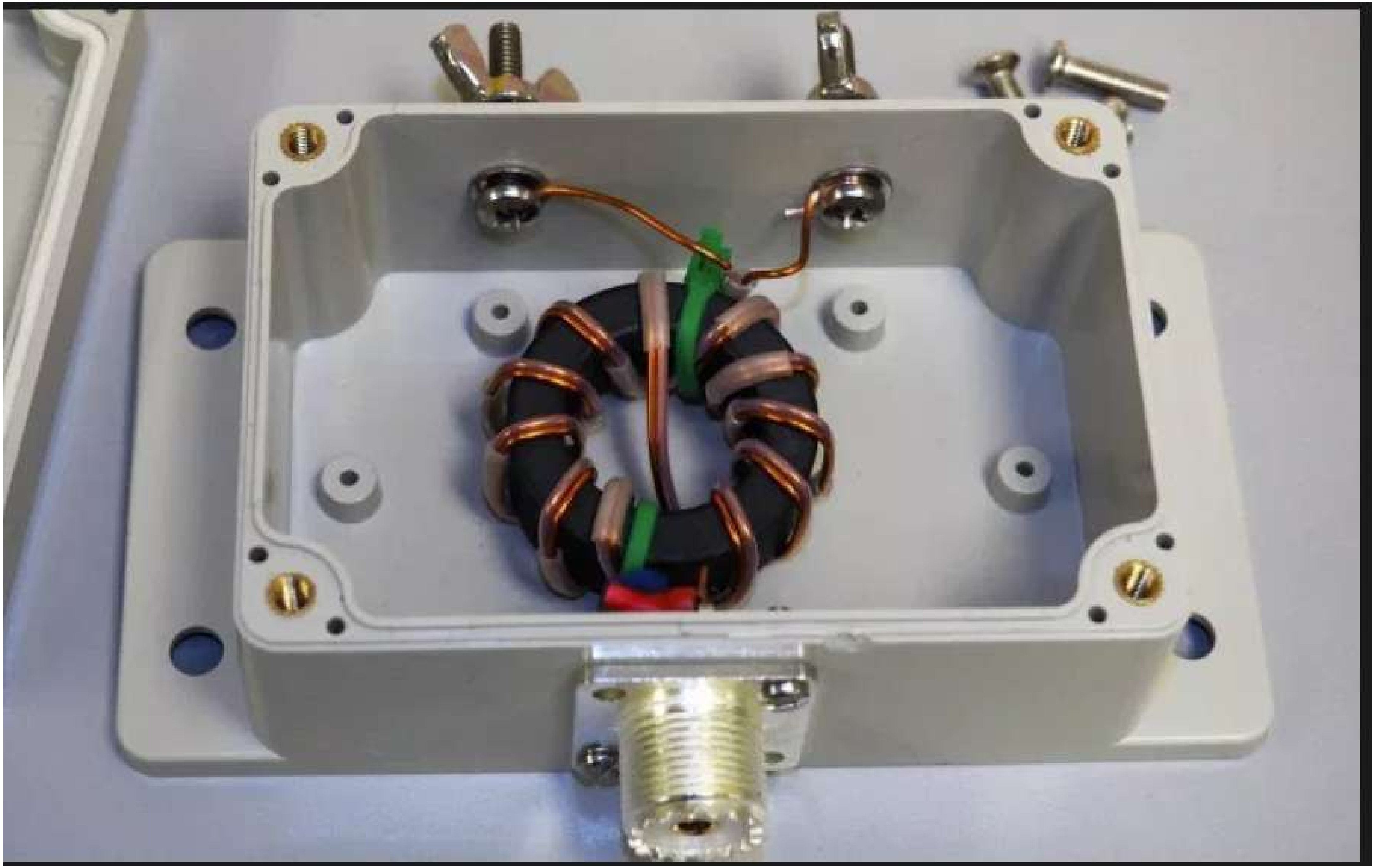

Towers 130 ft (39.624m)
Dropline
R&D Field Room
Giant Test Fixture located at Ion Power Group's Florida R&D Test Site
Four (4) towers 130 ft (39.624m) high - approx 330 ft between towers

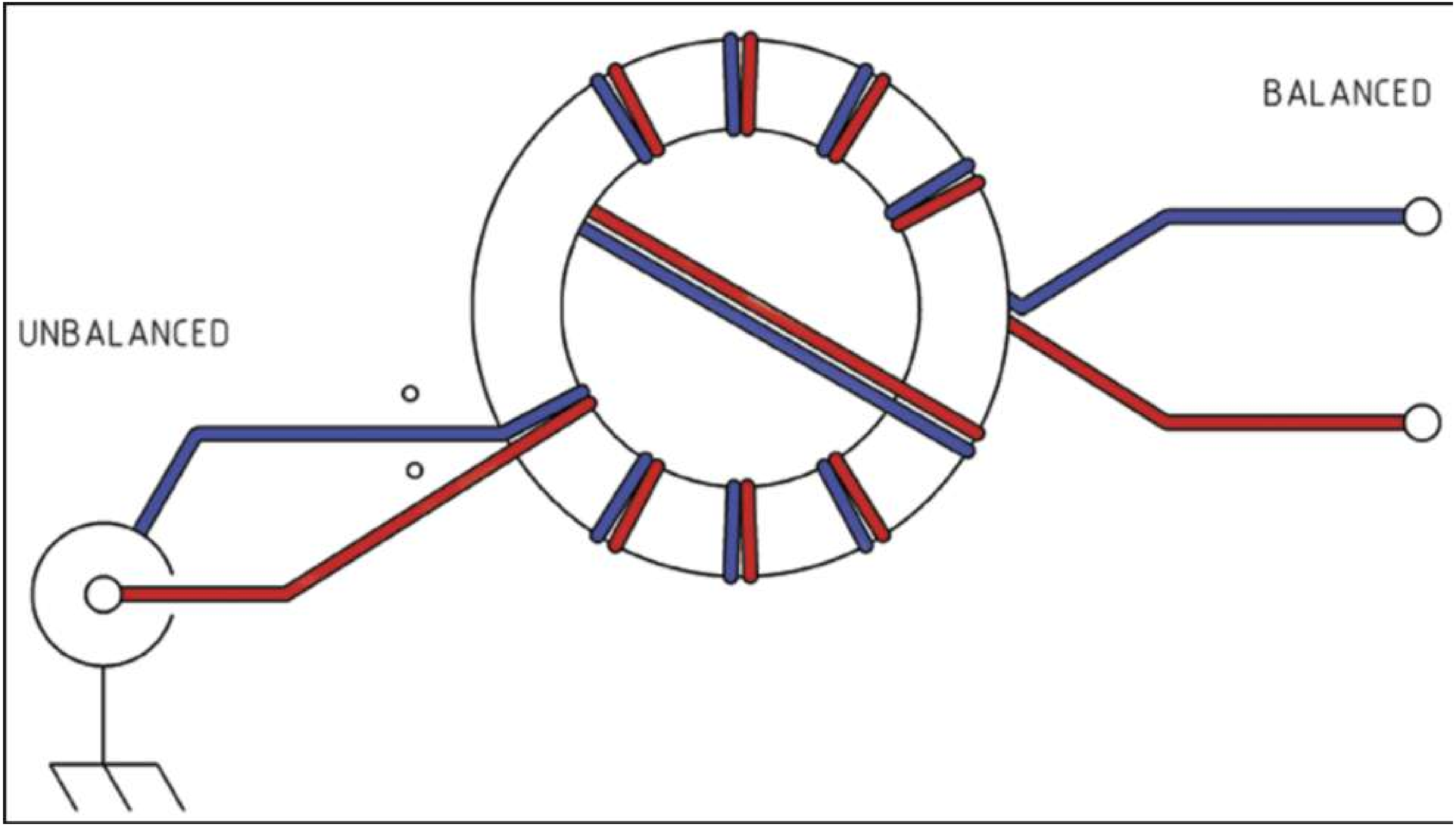


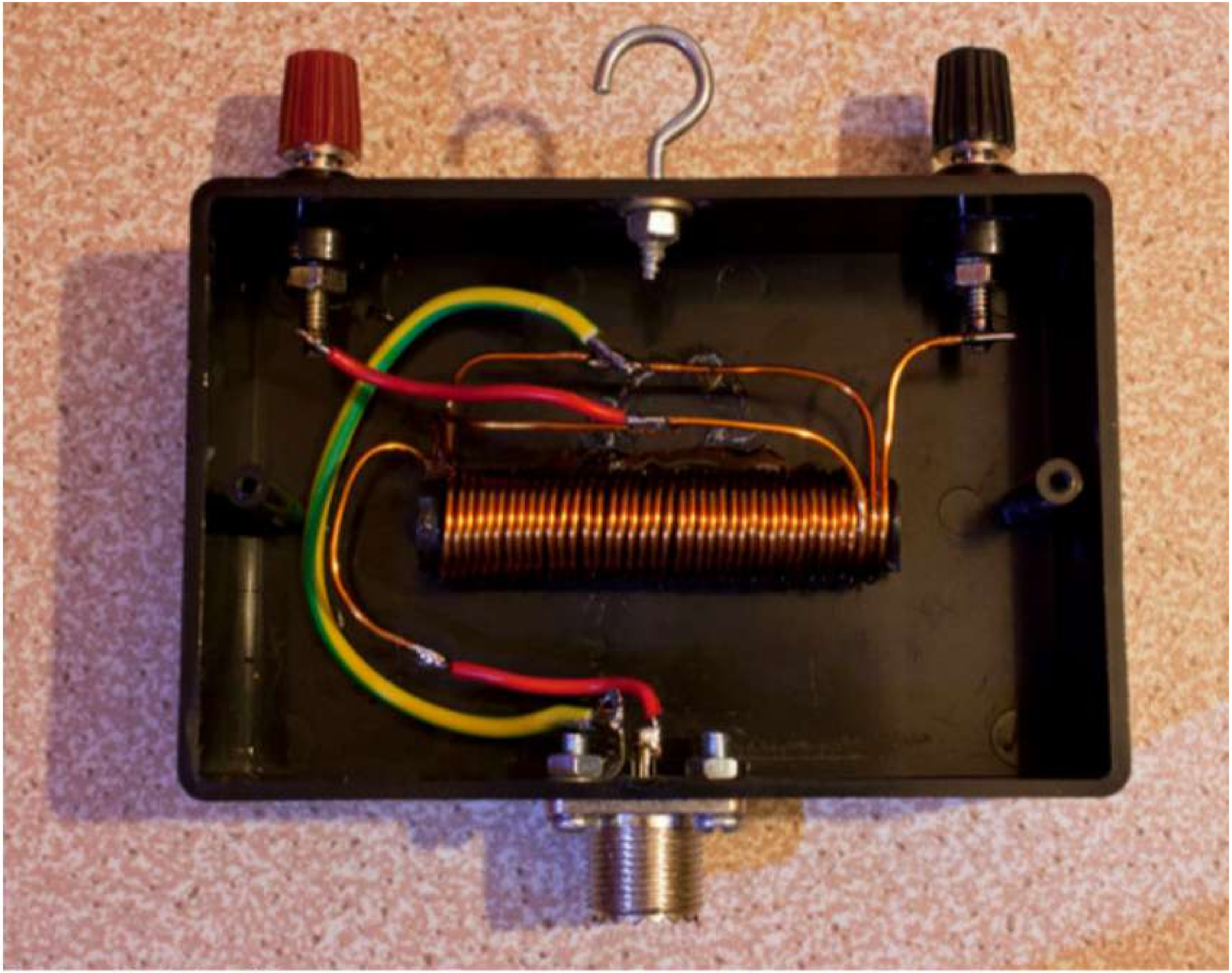
Ion Power Group's new method of coupling to atmospheric electricity is vastly different from all previous techniques by virtue of our patented breakthrough revealing that carbon nanomaterials such as **Graphite (and Graphene) microscopic shown at left, macroscopic shown at right are significantly more effective at coupling to airborne charge carriers (ions) than metal.** The use of carbon based nanomaterials distinguishes Ion Power Group from all other researchers.

I cut a hole in the side of the balun then cut the end off a piece of coax cable I had and soldered it to the contacts of the coax connection.

EXAMPLE: W1JR (Reisert) Cross-Winding Method

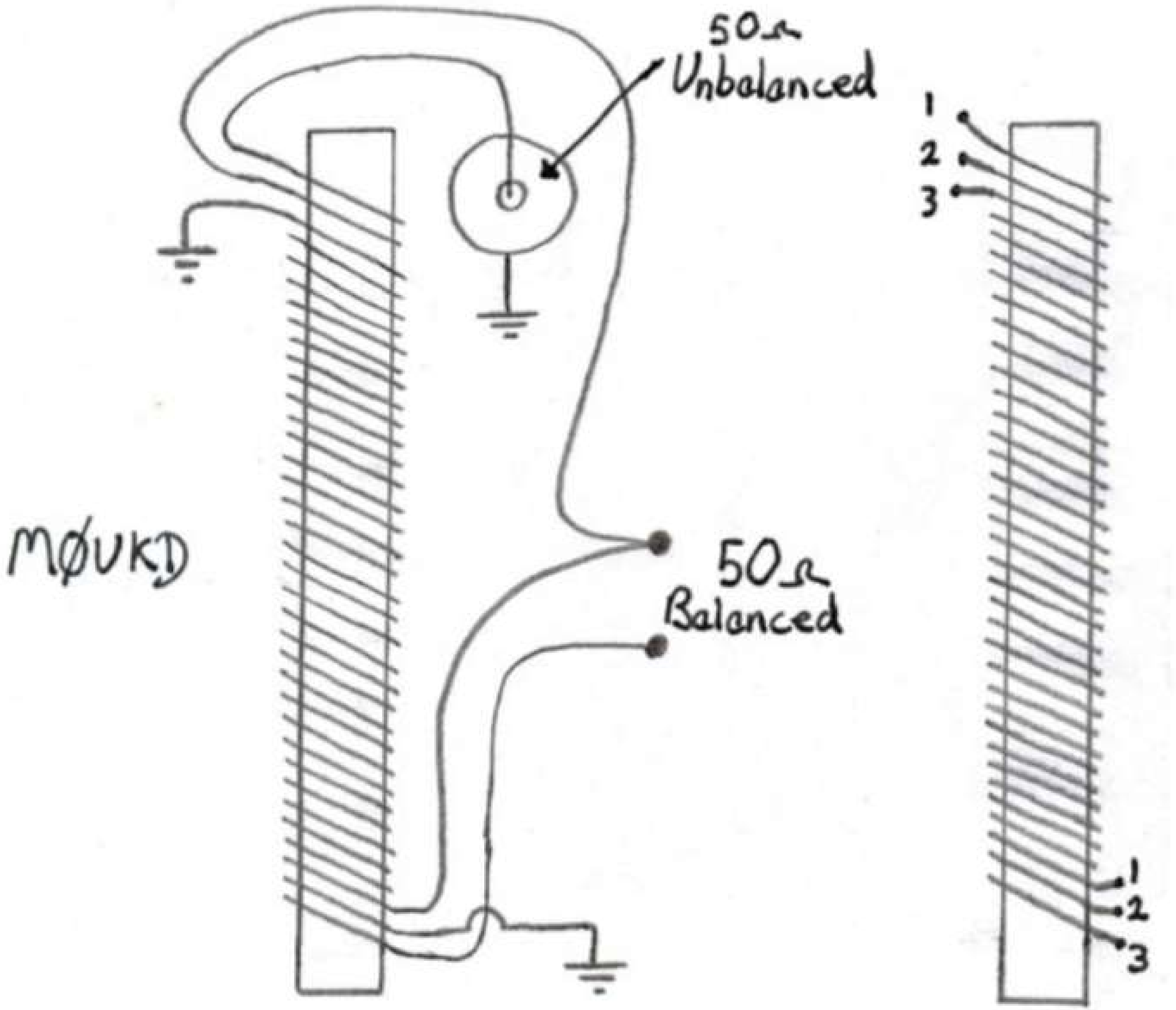



BALANCED
UNBALANCED



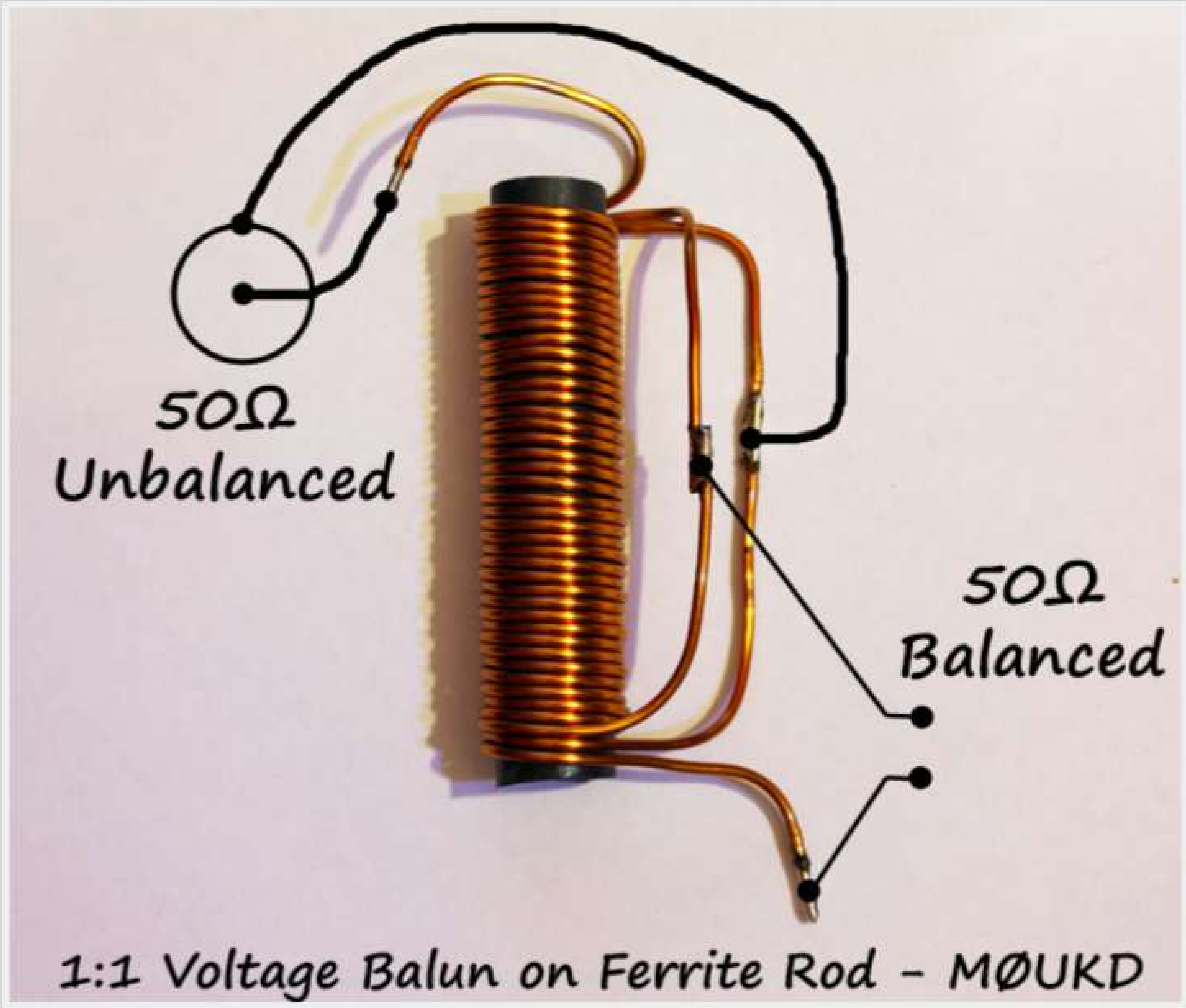
Balun 1: 1 for HF

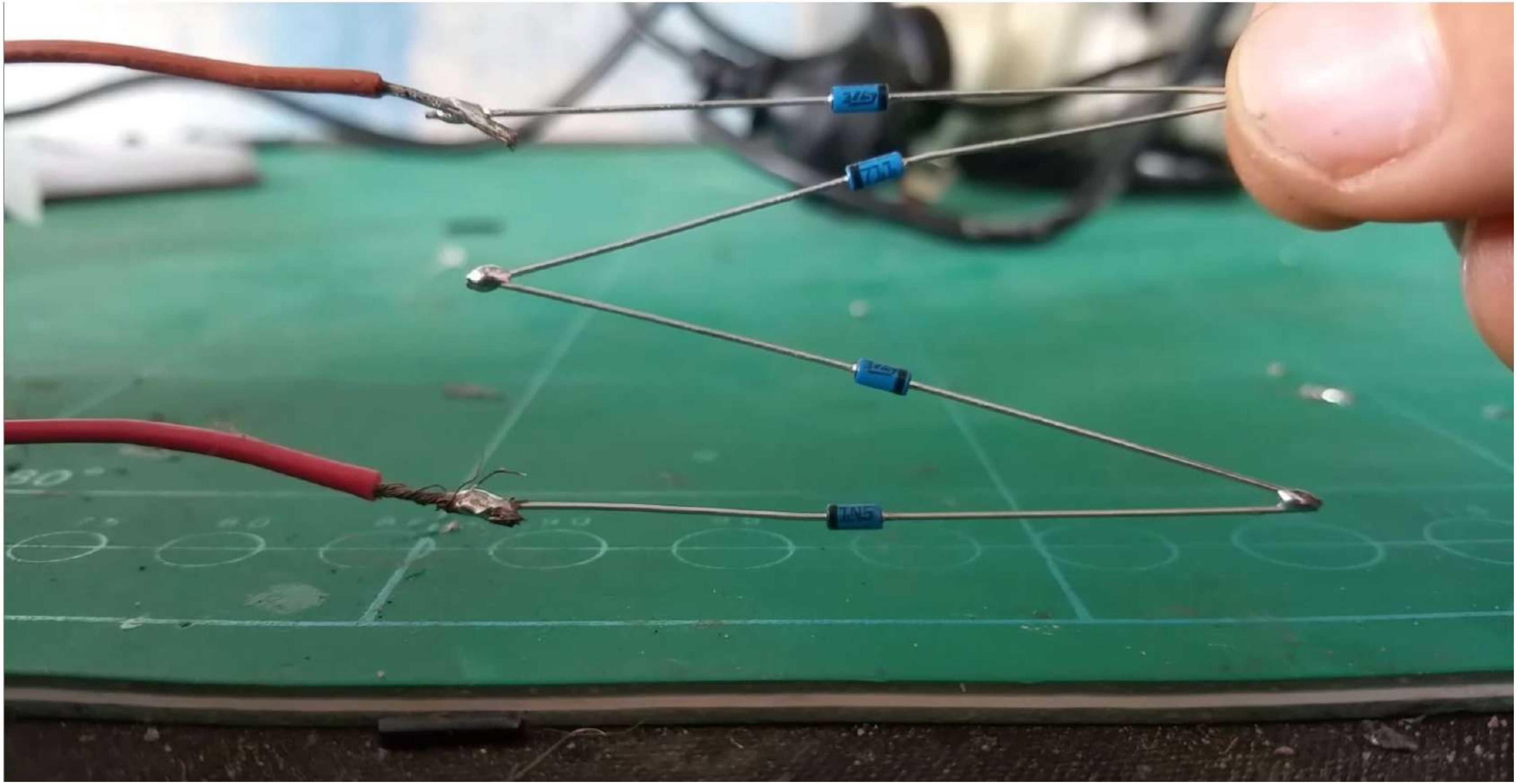
1:1 Voltage balun ("Ruthroff")

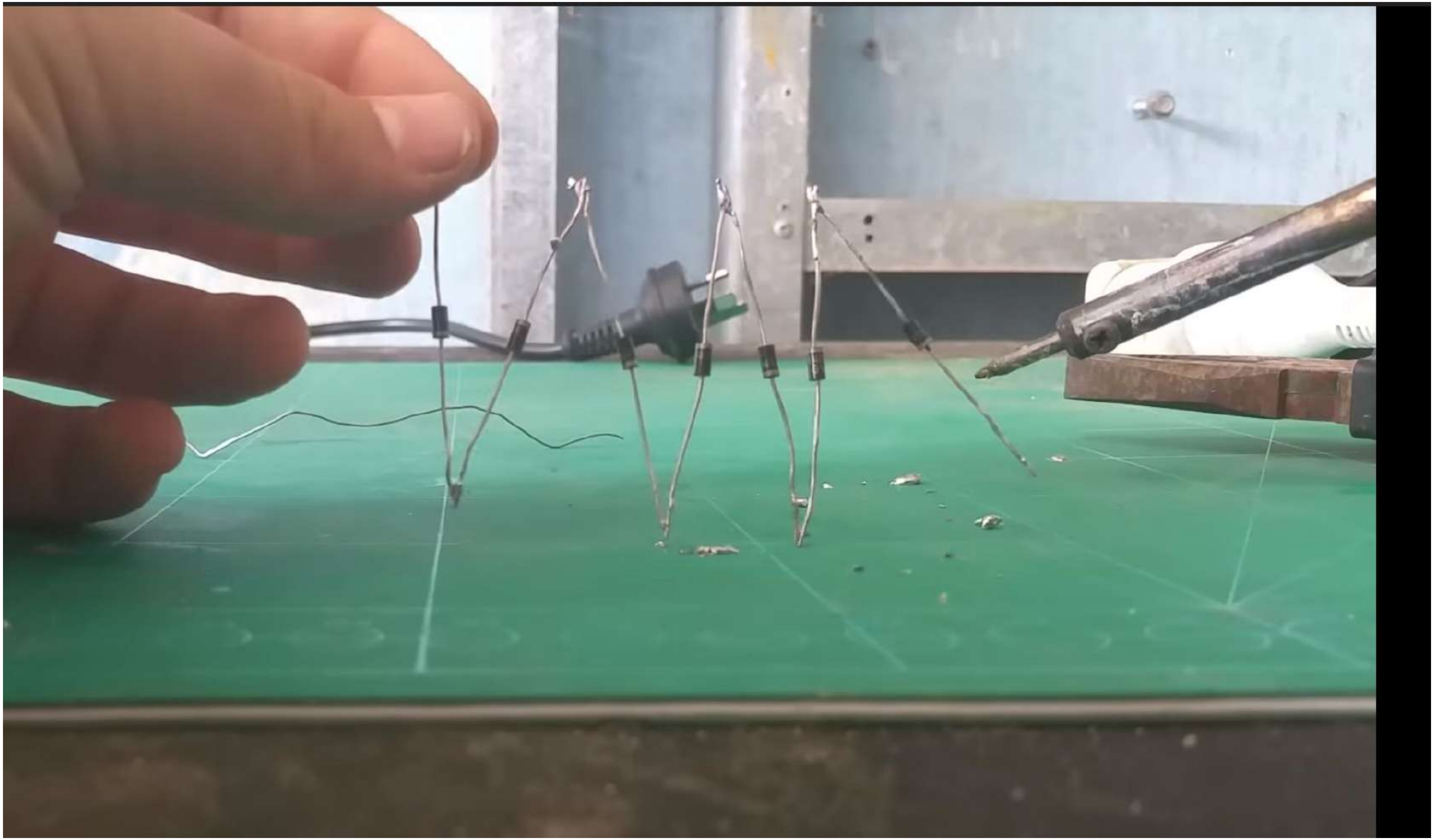


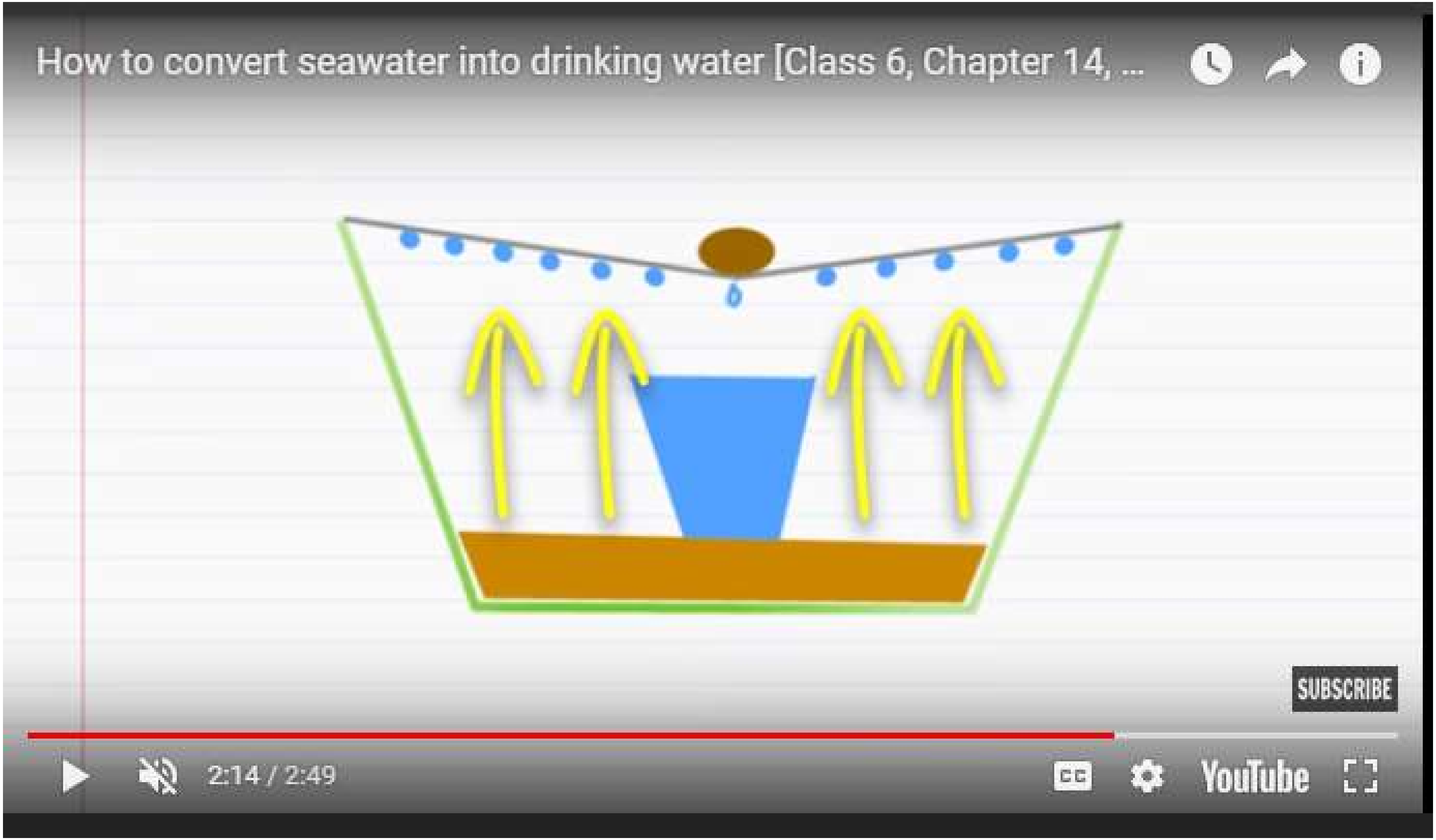
10 - 15 trifiler turns on ferrite rod.

1:1 ferrite rod voltage balun




1N5

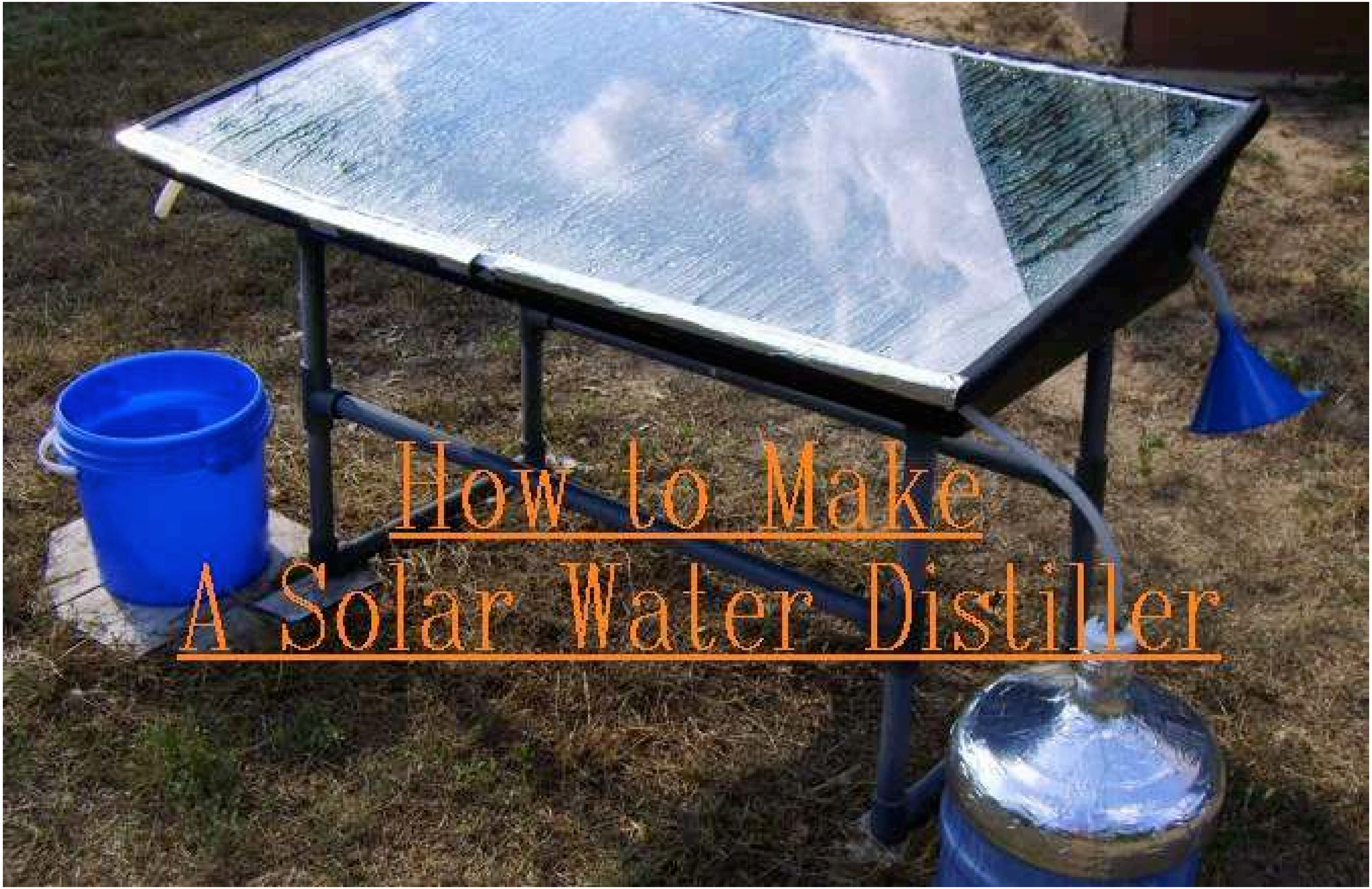


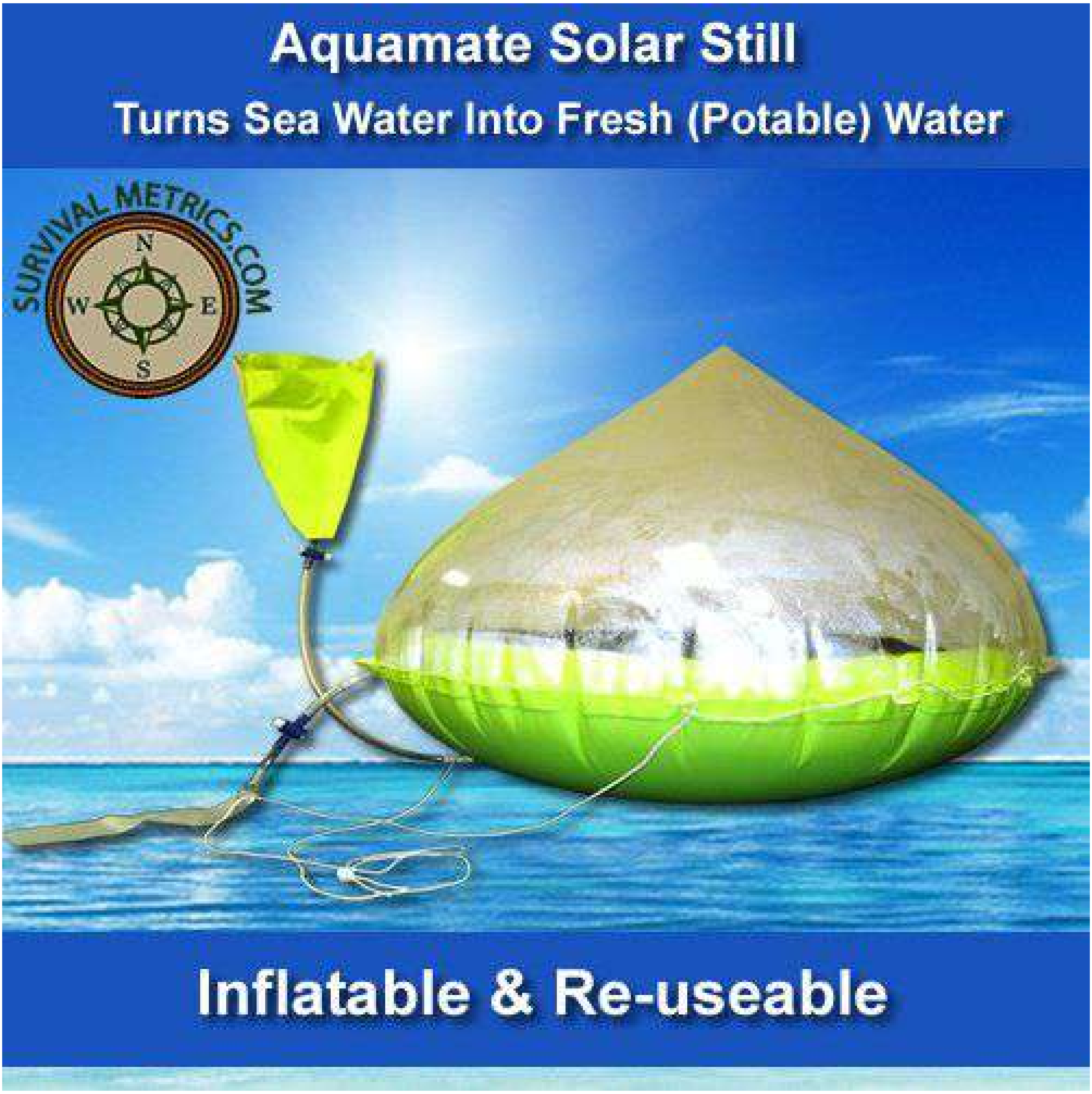

How to convert seawater into drinking water [Class 6, Chapter 14, ...
SUBSCRIBE
2:14 / 2:49
YouTube


How to convert seawater into drinking water [Class 6, Chapter 14, ...
SUBSCRIBE
1:09 / 2:49
YouTube


Emergency DIY Water Distillation for Survival Bug-Out Bag
Three 1/2" Cop El 45 Deg
Wet Rag
1/2" x 22" Cop
Stainless
Steel Funnel
Dirty/Salt Water
Clean/Fresh Water
2:59 / 3:27
YouTube

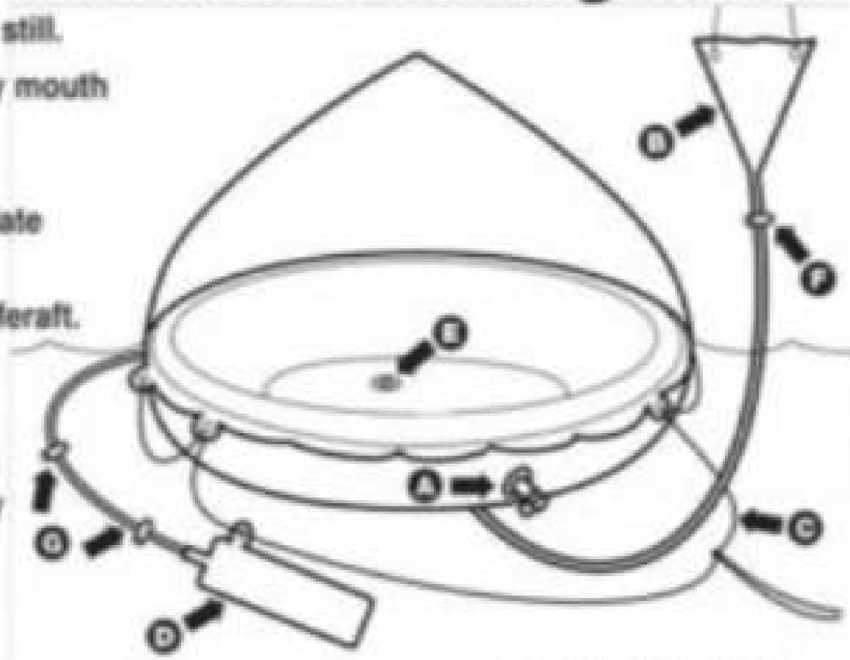

Solar Water Distilling
Simple Survival Water Distilling


How to Make
A Solar Water Distiller


Aquamate Solar Still
Turns Sea Water Into Fresh (Potable) Water
SURVIVALMETRICS.COM
N
W
E
S
Inflatable & Re-useable

Solar Still

Turns sea water or impure water into drinking water



1 Remove from pack and retain pack to top up salt water in still.

2 Lay out Solar Still and inflate valve A on floatation ring by mouth or by liferaft or dinghy pump.

3 Inflate clear dome to obtain shape using valve E in base. Do not over inflate. It may be necessary to manually regulate dome pressure during high temperatures.

4 Attach tapered bag B and attachment cord C to boat or liferaft.

5 Pour 5 litres of sea water into tapered bag B using pack which holds 5 litres (approx). Close valve F after filling.

6 Ensure both valves G are open in reservoir feed tube and drinkable water will start to collect in reservoir D. Air may need to be squeezed out to assist collection of water.

7 Ensure the Solar Still is kept in direct sunlight whenever possible.

8 Re-fill Solar Still and inflate/deflate dome as required.

9 Daily – Agitate Solar Still to dampen fabric.

10 To drain unwanted water open valve E in base.

11 Shelter Solar Still during bad weather.

IMPORTANT

IF INNER BLACK MATERIAL SALTS UP FILL WITH SEA WATER AND AGITATE TO CLEAR SALT CRYSTALS AND DRAIN AWAY. PROCESS DRINKING WATER AS INSTRUCTIONS UNTIL SALT IS NO LONGER PRESENT. IN NO CIRCUMSTANCES DRINK WATER THAT TASTES OF SALT.

NATO Stock No. 4610-66-144-2646

AQUAMATE PRODUCTS

P.O. Box 6032 Dunmow CM6 3AS U.K. Tel: +44 (0)1371 830 216 Fax: 831 733 e-mail: aquamatesales@aol.com


Ion Emitters project electrically charged ions into the air to simulate natural ions found at altitude
Graphene or Graphite fibers produce high voltage electricity by harvesting airborne ions
1000x probe and meter display the voltage and current generated by harvesting airborne ions

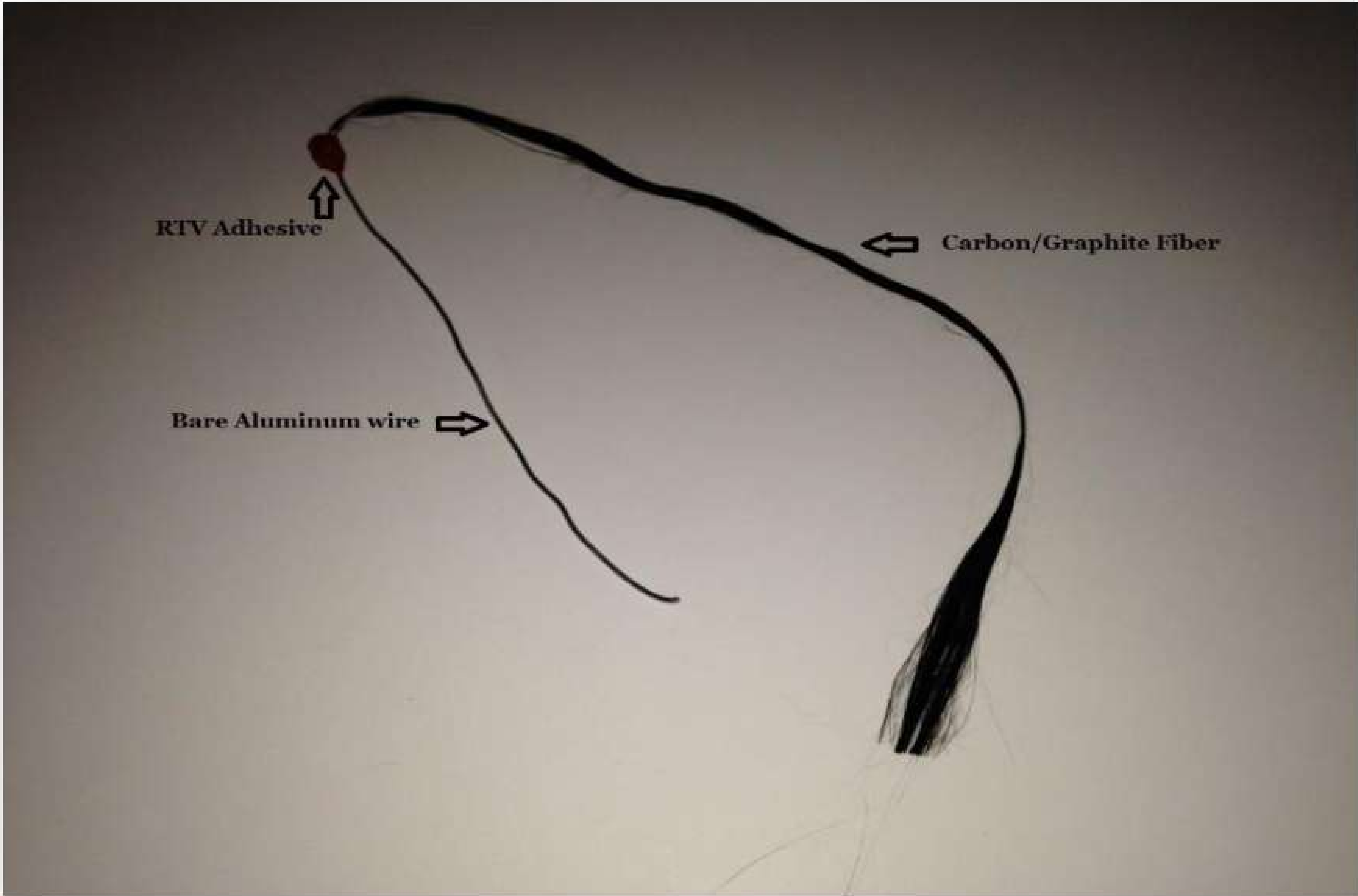
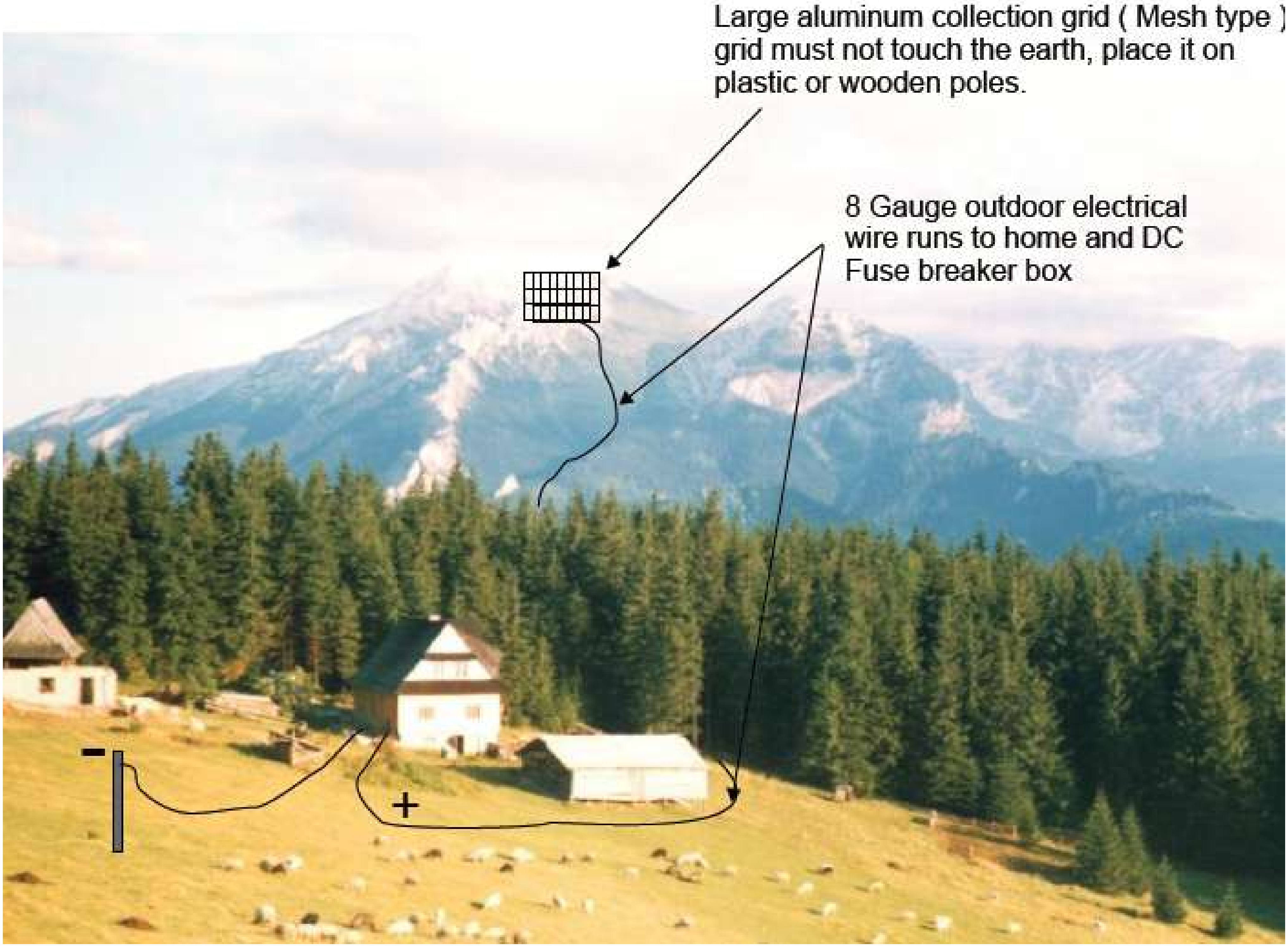
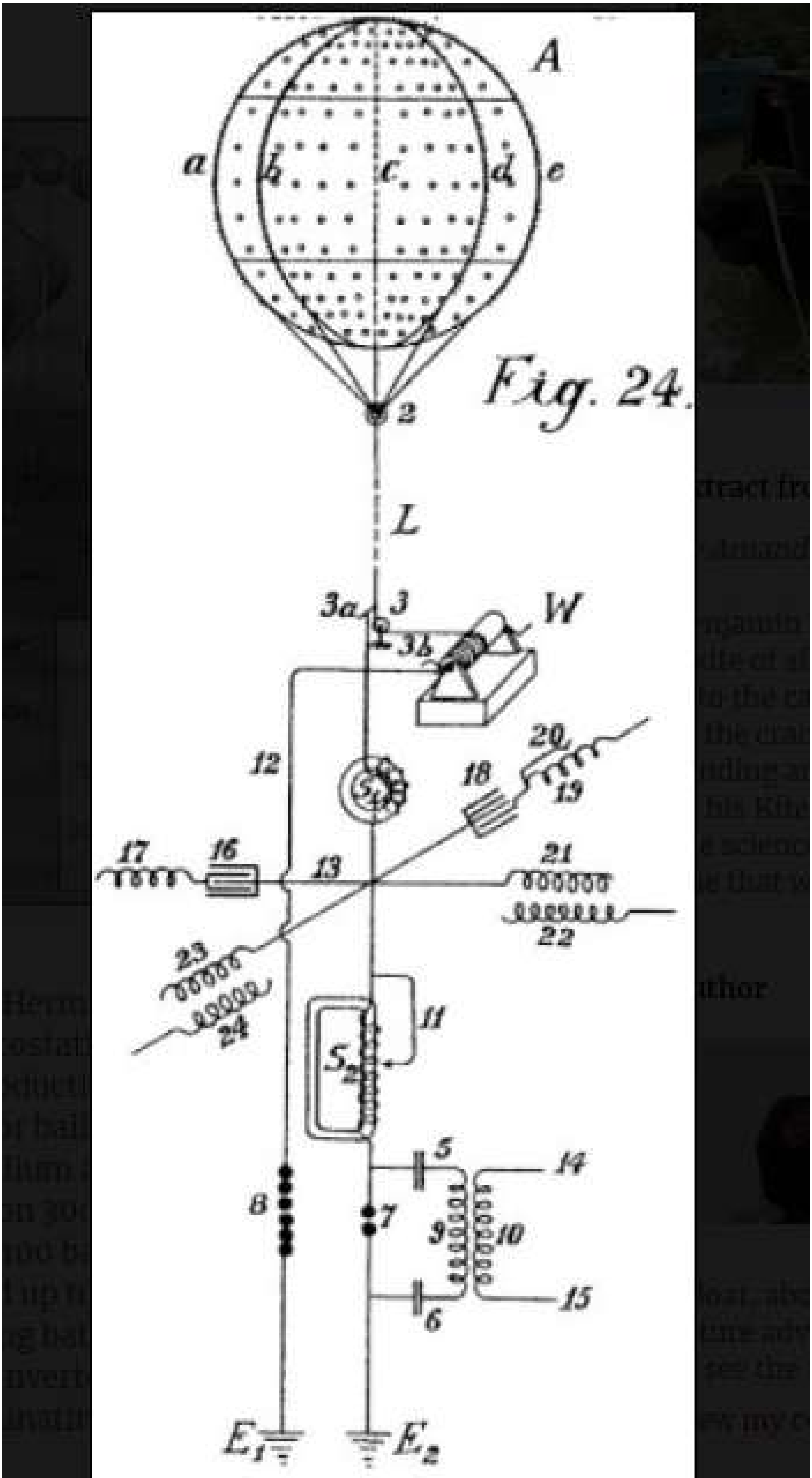


Image of a patented Ion Collector made of carbon/graphite weighing approximately 1 ounce.


Large aluminum collection grid (Mesh type)
grid must not touch the earth, place it on
plastic or wooden poles.
8 Gauge outdoor electrical
wire runs to home and DC
Fuse breaker box
-
+


A
a
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c
d
e
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3a
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3b
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12
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13
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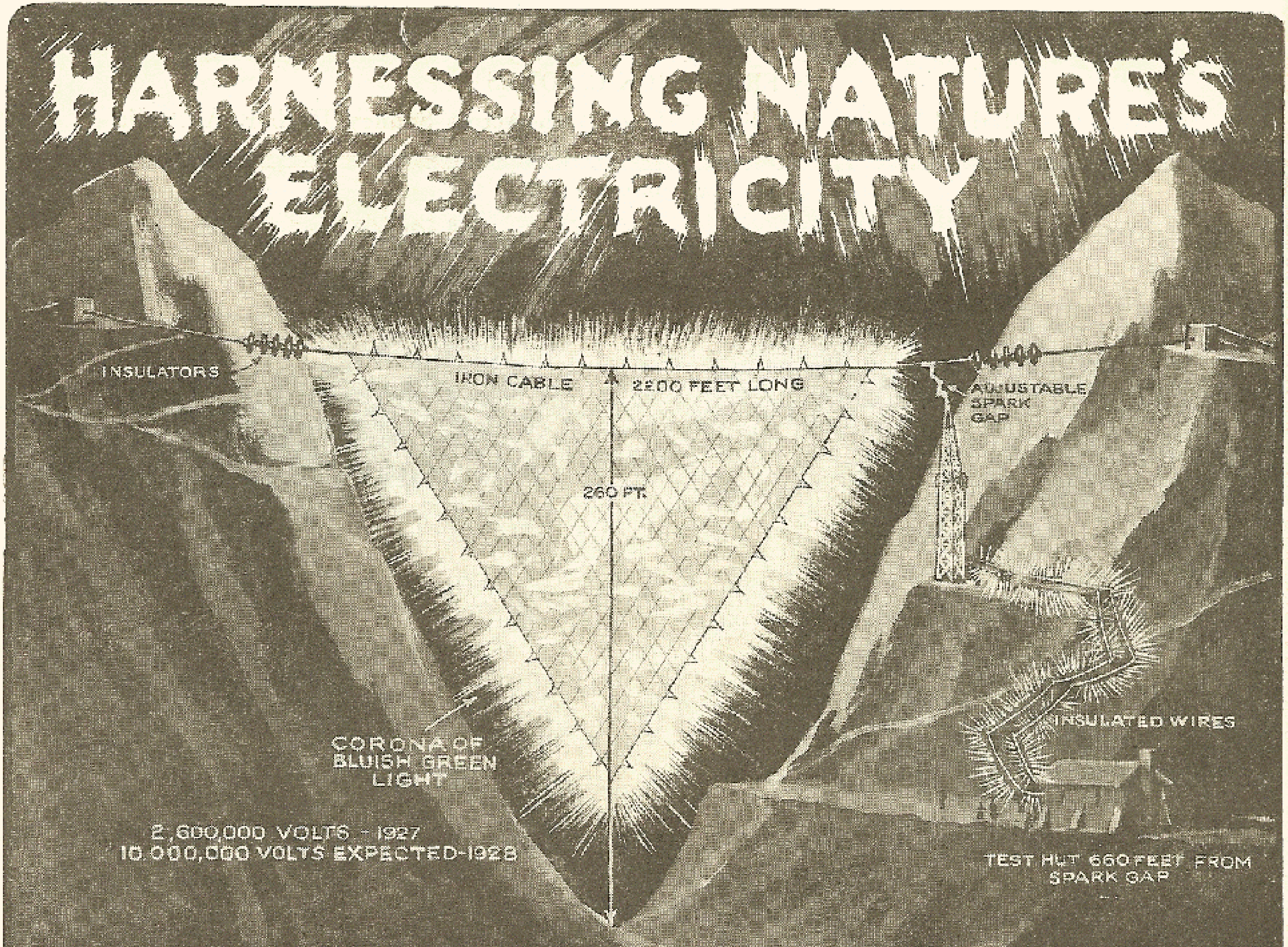
15
6
E_1
E_2
Fig. 24.


HARNESSING NATURE'S ELECTRICITY
INSULATORS
IRON CABLE
2200 FEET LONG
ADJUSTABLE SPARK GAP
260 FT.
INSULATED WIRES
CORONA OF BLUISH GREEN LIGHT
2,600,000 VOLTS - 1927
10,000,000 VOLTS EXPECTED-1928
TEST HUT 660 FEET FROM SPARK GAP

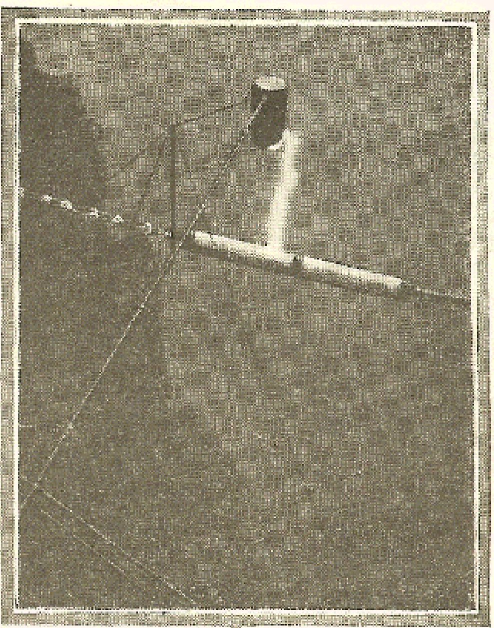
Remarkable European Experiments with Atmospheric Electrical Discharges with Potentials as High as 3,000,000 Volts

By HENRY TOWNSEND

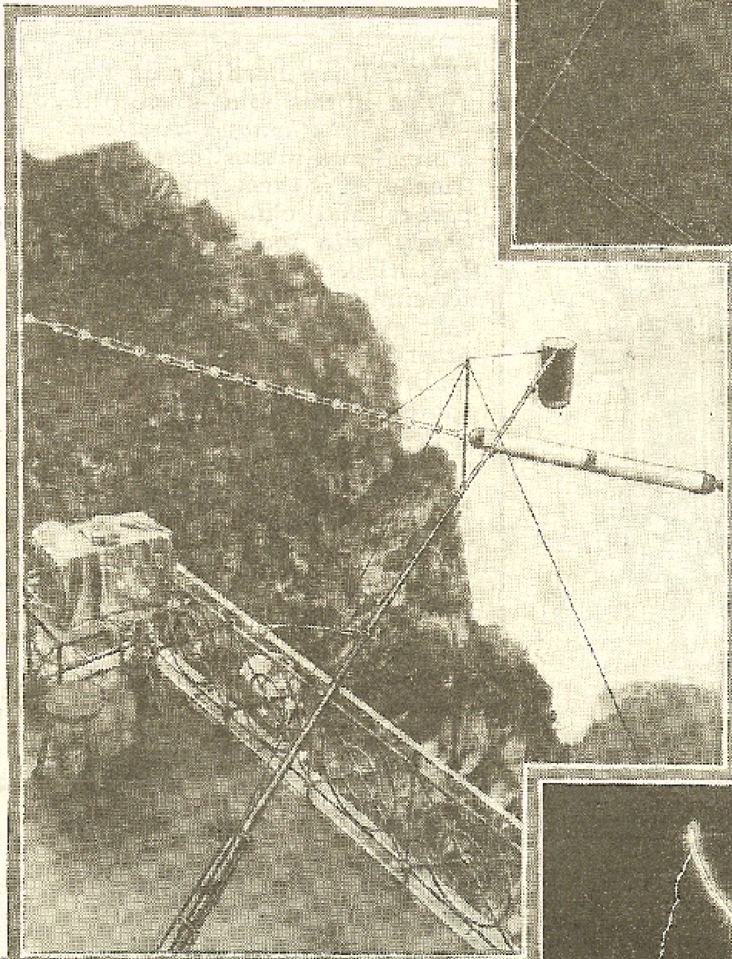
elevation of 350 ft., and these students of natural electrical phenomena have found a very desirable location in the Alps, where they can suspend between one mountain and an adjacent one, a strong iron cable having a length of about 2,000 ft. This cable is about 250 feet above the intervening valley, and from it these daring engineers have suspended a coarsely woven wire net, which serves as an electrical capacity to gather the electricity from the atmosphere. As shown in the pictures, the wire net is supplied with numerous sharp points to aid in collecting the current from the air.

As the accompanying photographs of the actual apparatus and wire cable used last year clearly show, an adjustable spark gap of considerable length is provided. By adjusting this spark gap to various lengths, it is possible to judge the voltage of the discharge which leaps the gap at any moment. Mr. F. W. Peek, Jr., the well-known American worker in the realm of high voltage measurements, together with other engineers, have provided tabulated data and curves for various lengths of both needle and sphere type spark gaps. As one of the accompanying diagrams shows, it is a simple matter to calculate the voltage when a certain length of gap is used. The engineer first checks the length of the gap on the chart; he then follows a line horizontally from the gap length, to where it intersects with the angular line on the chart; and from the point of intersection he looks in a visual line downward to a place where the voltage is given. For needle spark gap measurements, the characteristic curve on the chart is practically a straight line, while for sphere gaps the characteristic curve on the voltage versus gap length, is a curved line. Those interested in high voltage measurements by means of the spark gap method can find the voltage-gap tables and charts in the *Standardization Rules* of the American Institute of Electrical Engineers. According to Mr. Peek's researches, the voltage per foot of atmospheric electrical discharges is about 100,000, while in laboratory measurements with A.C., transformer high potential discharges, the average voltage per foot of spark was found to be about 150,000 volts. The voltage of a lightning flash may

(*Continued on page* 156)

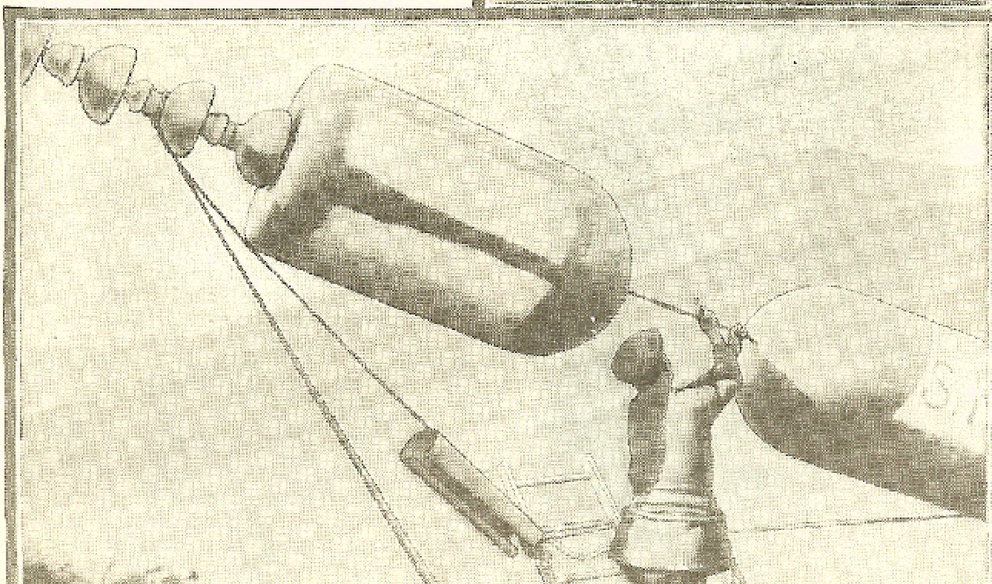


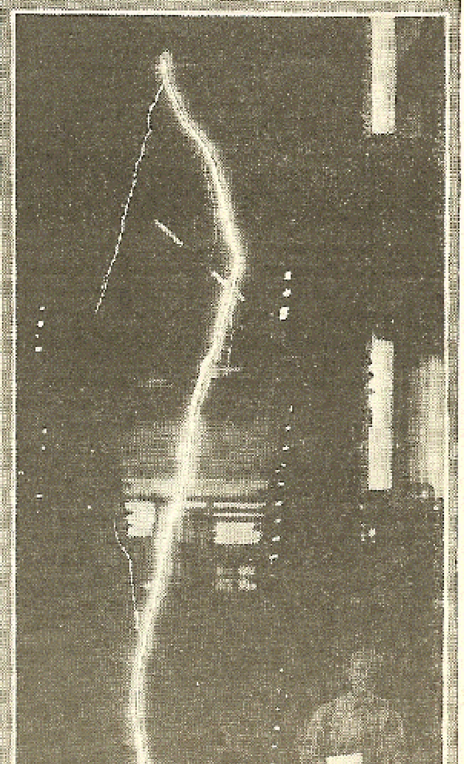
Actual photo above shows 13 ft., heavy spark obtained from the collecting net in the Alps by the German scientists. The voltage is about 2,000,000. The spark occurred once per second for 30 minutes.



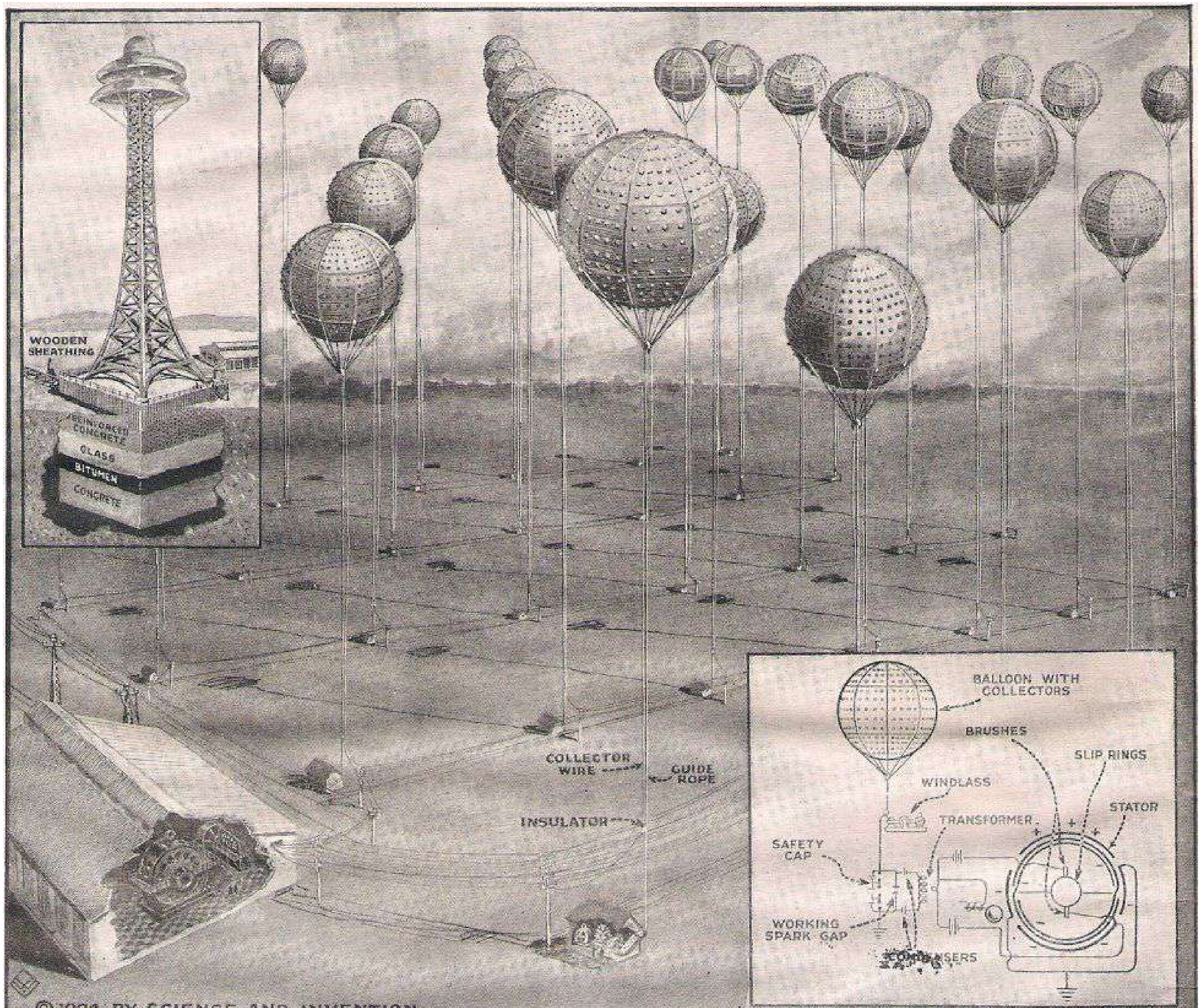
Photo, left, shows the adjustable spark gap used in the Alps. Notice the heavy electrode on the end of the adjustable arm to which the spark jumps.

Actual photograph of the experimental "kite" used by the German experimenters in the Alps Mountains, for the purpose of accumulating high potential electrical discharges from the atmosphere. Note the size of the insulators.

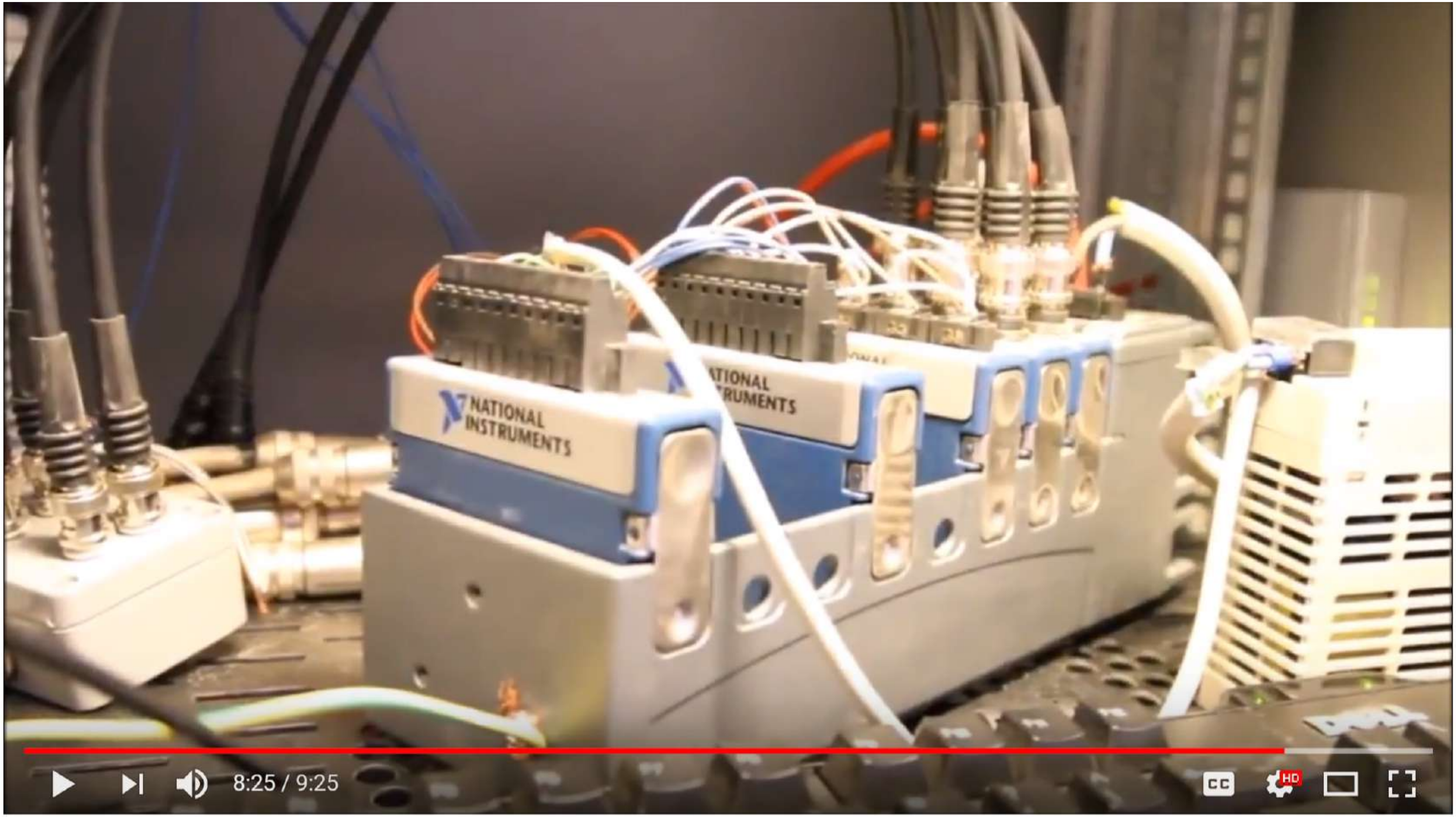




Below we see 3,000,000-volt artificial lightning stroke produced in G. E. Laboratory at Pittsfield, Mass. Note man.



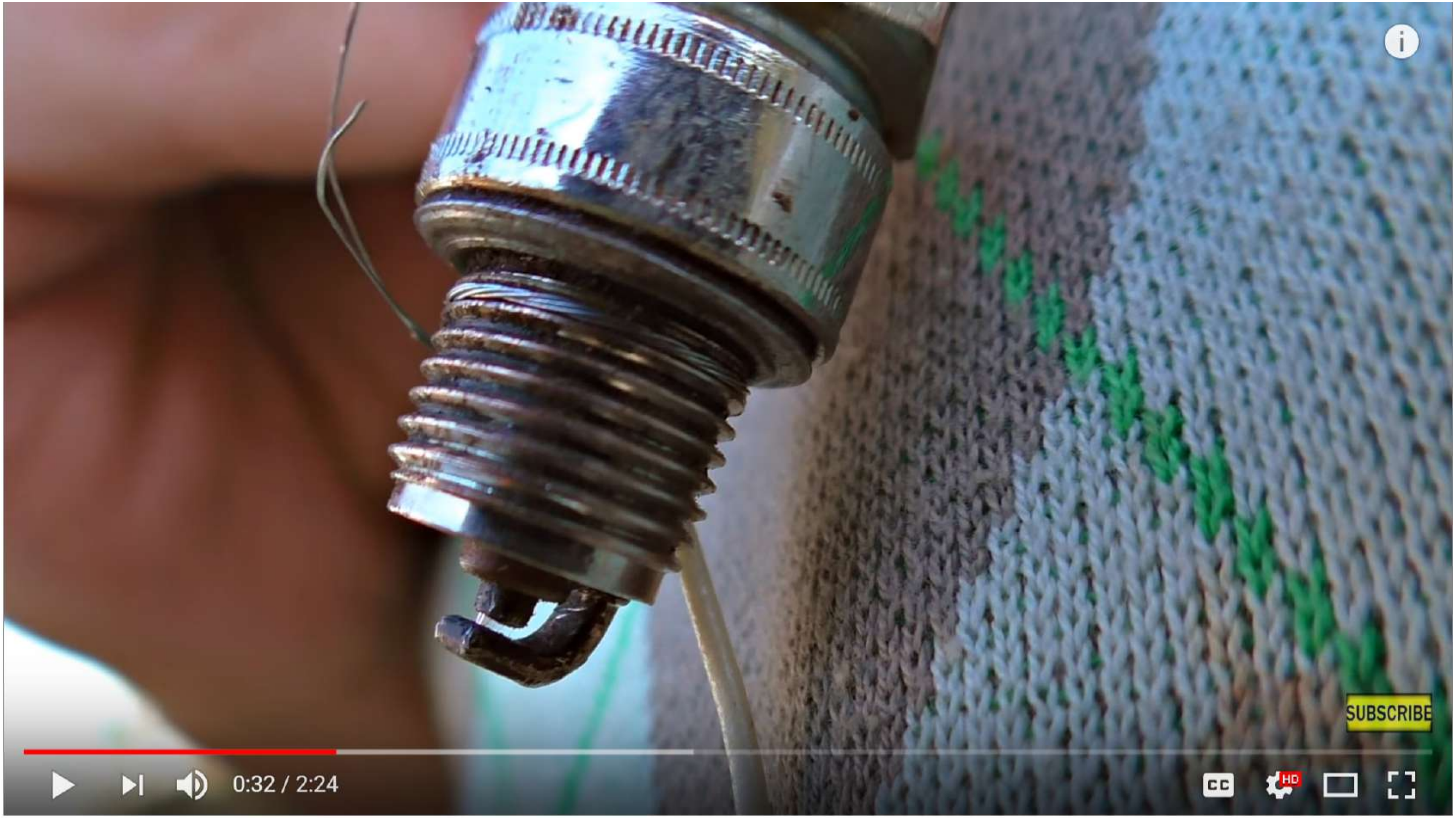
© 1922 BY SCIENCE AND INVENTION



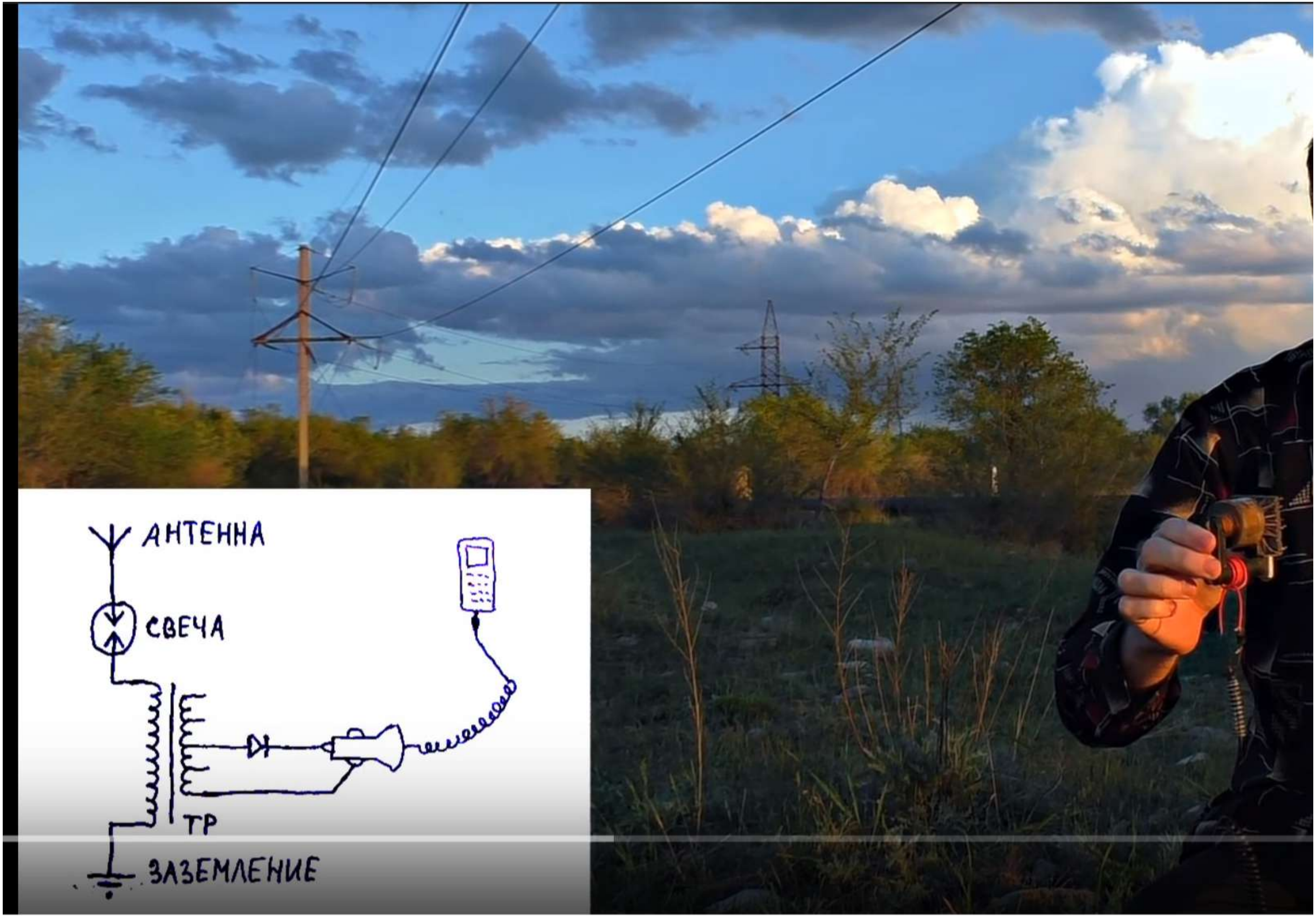
Flat Earth CON SPIRES! Cathedral Spires Are Secretly Atmospheric Electricity Ma


1:02 / 10:38
HD


1:45 / 9:25
HD



Charging from the power lines.


АНТЕННА
СВЕЧА
ТР
ЗАЗЕМЛЕНИЕ


MULTI DISPLAY DMM
10.1
POWER
hFE
PNP NPN
COM
VΩ


SPARK PLUG DIODE CAR CHARGER FLYBACK TRANSFORMER TV ANTENNA
POWER
DT-82
COM

must depend on the area occupied by the building; for instance, a church of ordinary design and size would require four "down" rods, that is, one from the spire, one on both sides of the nave, and one at the extreme end. It is advantageous to run two conductors from the top of the spire or tower, one on each side.

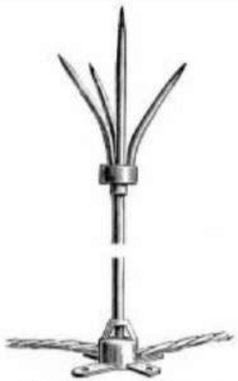


FIG. 8.—ELEVATION ROD FOR HORIZONTAL POSITION OR FLAT ROOF.

FIG. 7.—3 FT. ELEVATION ROD, WITH POINTS BRAZED TOGETHER, USED WHERE EXPOSED TO MUCH HEAT.

FIG. 9.—PLAIN POINT ELEVATION ROD.

Horizontal Conductors (see L.R.C. Suggestion 2, page 15). To complete the system, all the down conductors should be intersected by at least one horizontal rod, with the object of having a path for any side flash or portion of the main stroke which may not be carried away harmlessly by the main rod. Where there is a considerable length of roof, aigrettes (Fig. 11) should be fixed as shown by Fig. 10, which is taken from a model of the roof of Westminster Abbey. The down conductros on their way to earth should be connected to any metal work in the neighbourhood, also to rain-water gutters,

pipes, etc.; the number of these subsidiary down conductors depends on the length of the roof.

At a conference held on behalf of the L.R.C., in April, 1904, Sir Oliver Lodge suggested that these down conductors should, in the case of a church, be run between each of the windows.

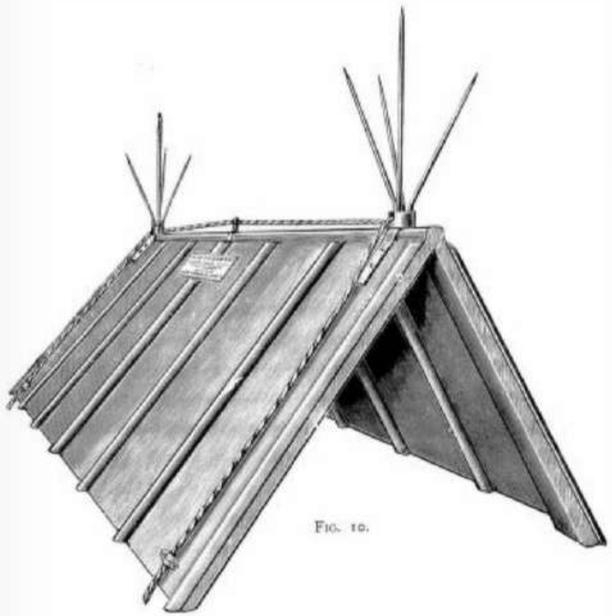


FIG. 10.

Method of running Conductors. These, whether vertical or horizontal, should be kept away from the structure (L.R.C. Rule 10) so as to avoid all sharp bends, and facilitate straining, and secondly, to prevent the corrosion which may take place where the metal is in contact with the brick or stone work. It is found advisable

Modern lightning conductors: an illustrated

surface of the joint need not necessarily exceed that of the cross section of the conductors. The joint should be put together previously by screws or rivets, and the soldered joint, especially if used in underground work, should be carefully protected from local electrical action by tarred rope. Stranded iron conductors can be connected (as previously described) by use of a box joint; the box, Fig. 28, must be of the same metal as the conductors.

Vanes.—Particular attention must be paid to the necessity of making a permanent joint to the spindle. A clamp is prepared of the same material as the spindle, and is furnished with two bolts to tighten; if iron is used it is well to line the clamp with a piece of sheet lead. The conductor is sweated into a socket which is fitted with an eye, through which one of the tightening bolts passes. In the

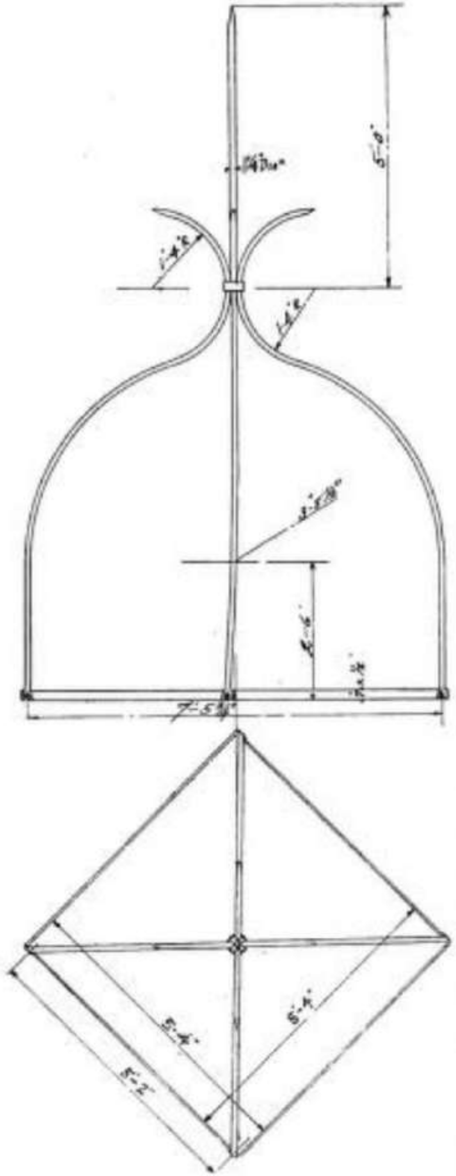


FIG. 27.—TERMINALS IN FORM OF AN ARCH FOR CHIMNEY STACK.

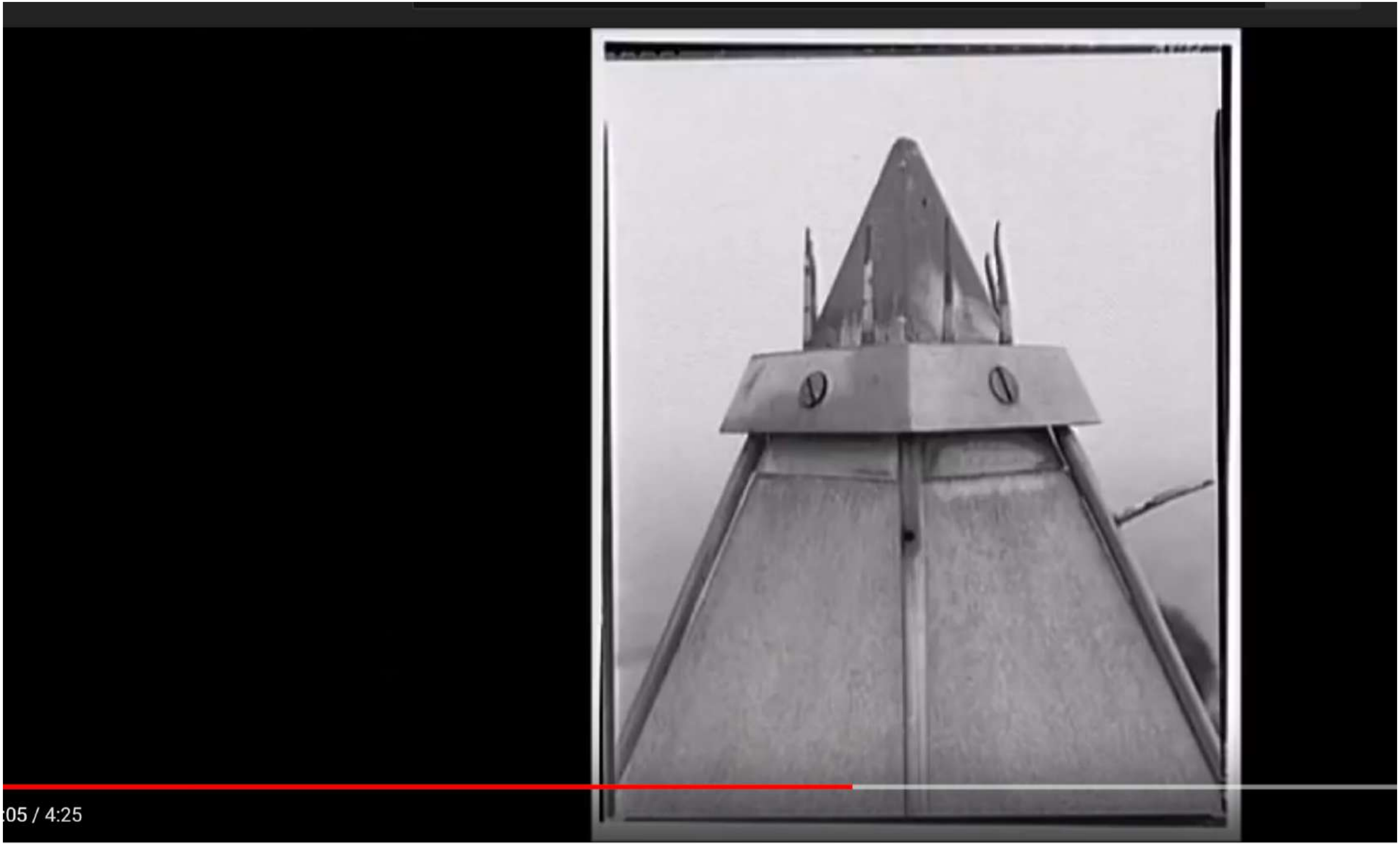
FIG. 28.

case of the vanes of churches and those fixed in inaccessible positions, two separate clamps should be used.

Internal Masses of Metal.—Roof trusses fitted with longitudinal iron tie rods will, as a rule, be found to be electrically connected, but should this not be the case each truss must be joined to the conductors. All large and long masses of metal, such as beams, girders, roof trusses, tie rods, hot water systems, traveller ways, hoisting crabs, engines, boilers, large machines, and ventilators fixed in the interiors of buildings, should be connected to all conductors that pass near them, and as far as possible with one another. The discontinuous parts of traveller rails should be connected by straps, or in some cases tramway bonds might be used. If electric light wires are run in tubes, such as the "SIMPLEX," this should be earthed. Metallic contact between lead or zinc sheeting and flashings should be carefully studied, and for special work strips of sufficient size should be either burnt on to lead or soldered in such a way that the joint will stand rough usage, and allow for expansion or contraction.

Earth Connection.—"*It is essential that the lower extremity of the conductor be buried in permanently damp soil; hence proximity to rain-water pipes, and to drains, is desirable. It is a very good plan to make the conductor bifurcate close below the surface of the ground, and adopt two of the following methods for securing the escape of the lightning into the earth. A strip of copper tape may be led from the bottom of the rod to the nearest gas or water* main—*not merely to a lead pipe—and be soldered to it; or a tape may be soldered to a sheet of copper 3 feet by 3 feet and* $\frac{1}{16}$ *inch thick, buried in permanently wet earth, and surrounded by cinders or coke; or many yards of the tape may be laid in a trench filled with coke, taking care that the surfaces of copper are, as in the previous cases, not less than 18 square feet. Where iron is used for the rod, a galvanised iron plate of similar dimensions should be employed.*

"The use of cinders or coke appears to be questionable owing to the chemical or electrolytic effect on copper or iron. Charcoal or pulverised carbon (such as ends of arc-light rods) is better. **A tubular earth** consisting of a perforated steel spike driven tightly into moist ground and lengthened up to the surface, the conductor reaching to the bottom and being packed with granulated charcoal, gives as much **effective area** as a plate of larger surface, and can easily be kept moist by connecting it to the nearest rain-water pipe. The resistance of a tubular earth on this plan should be very low and practically constant."—*Lightning Research Committee, 1905.*



Washington Monument is an Atmospheric Electricity Mast

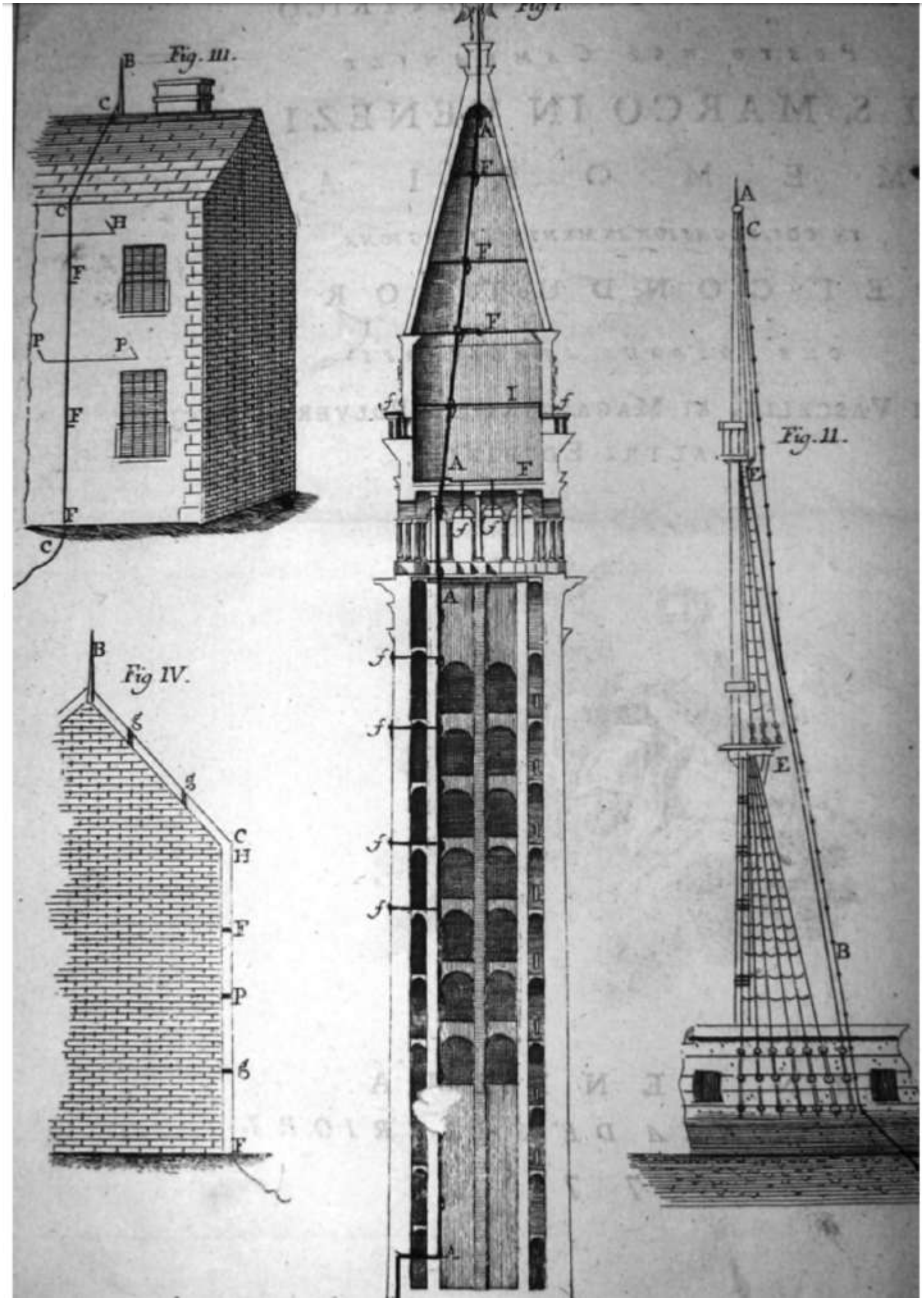
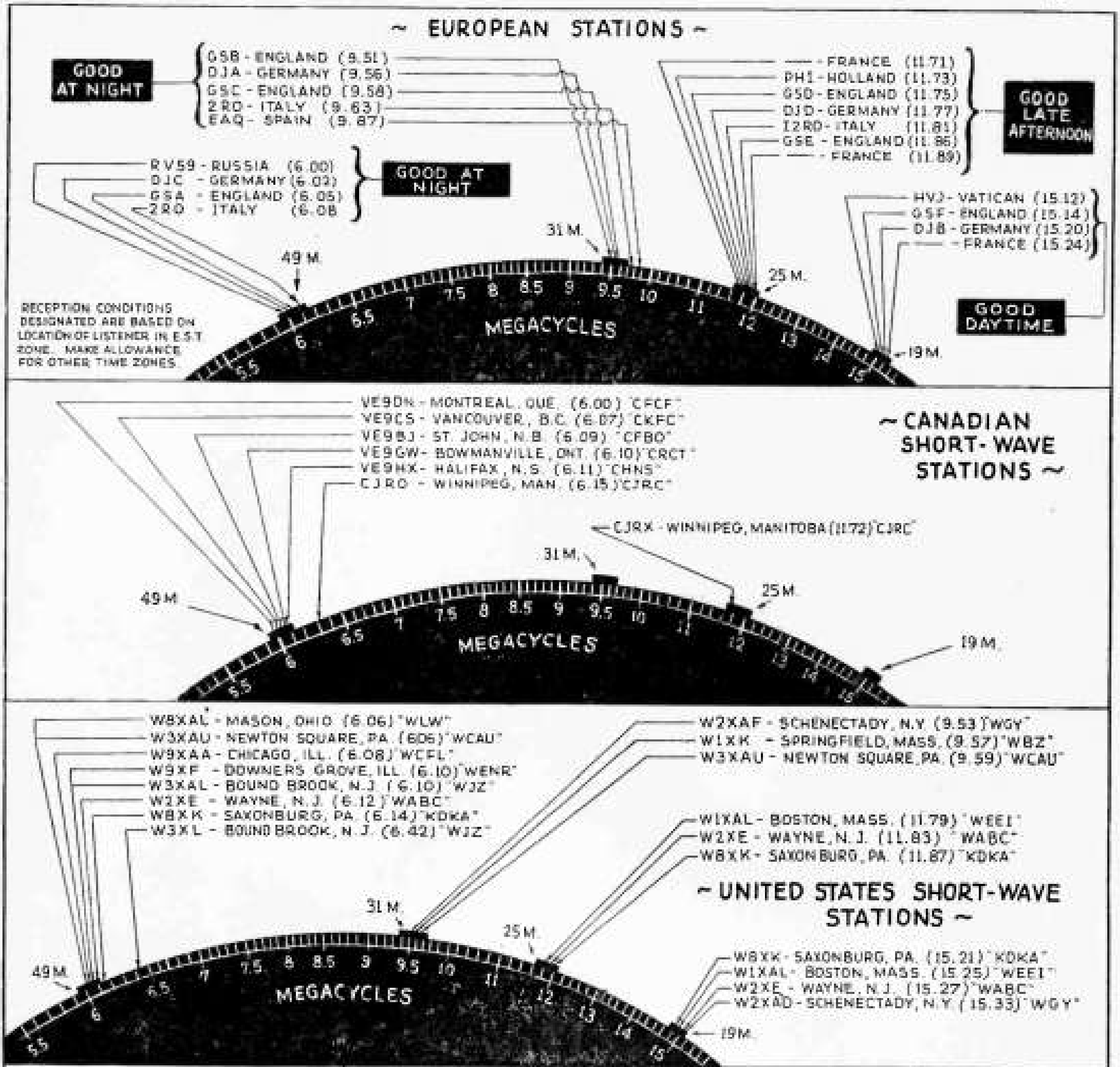


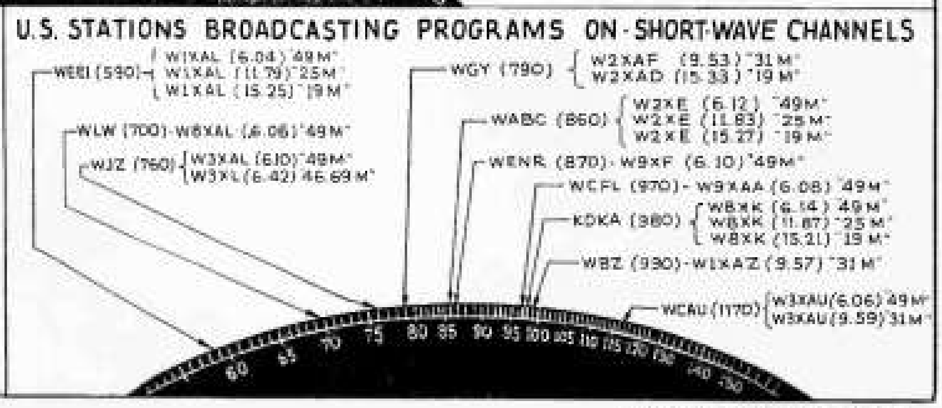
Figure 2.3. The lightning rod that Toaldo designed for the church of San Marco in Venice. GiuseppeToaldo, “Del conduttore elettrico posto nel campanile” (Padua, 1776). Franklin Collec-

Gilded Temples Are Secretly Atmospheric Electricity Masts

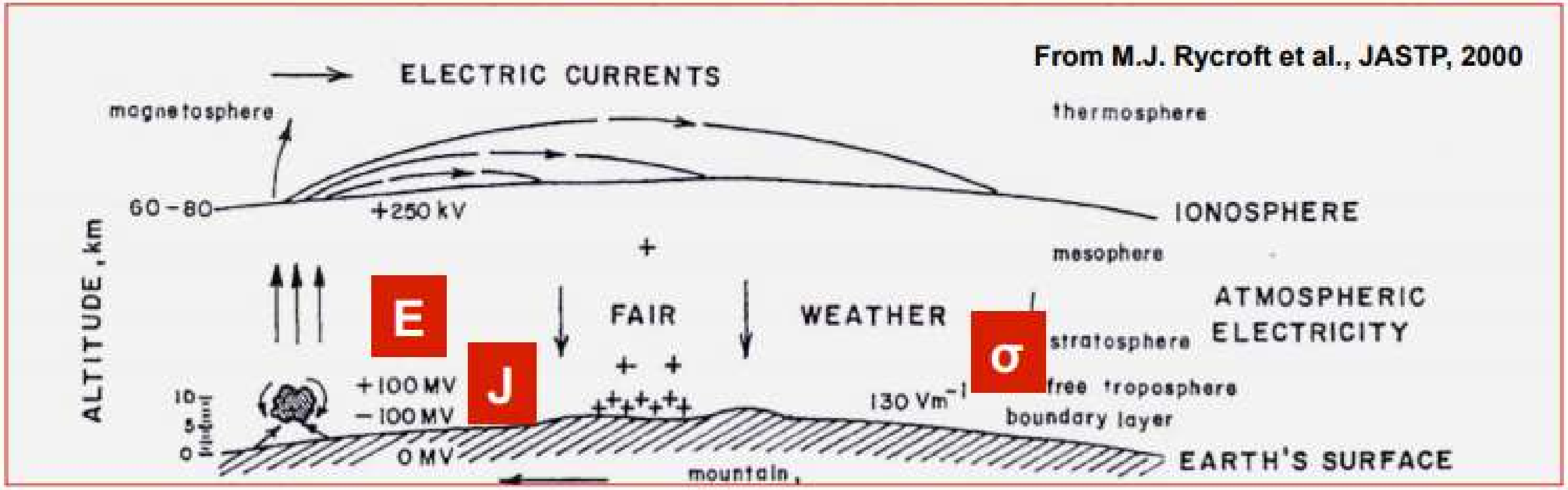


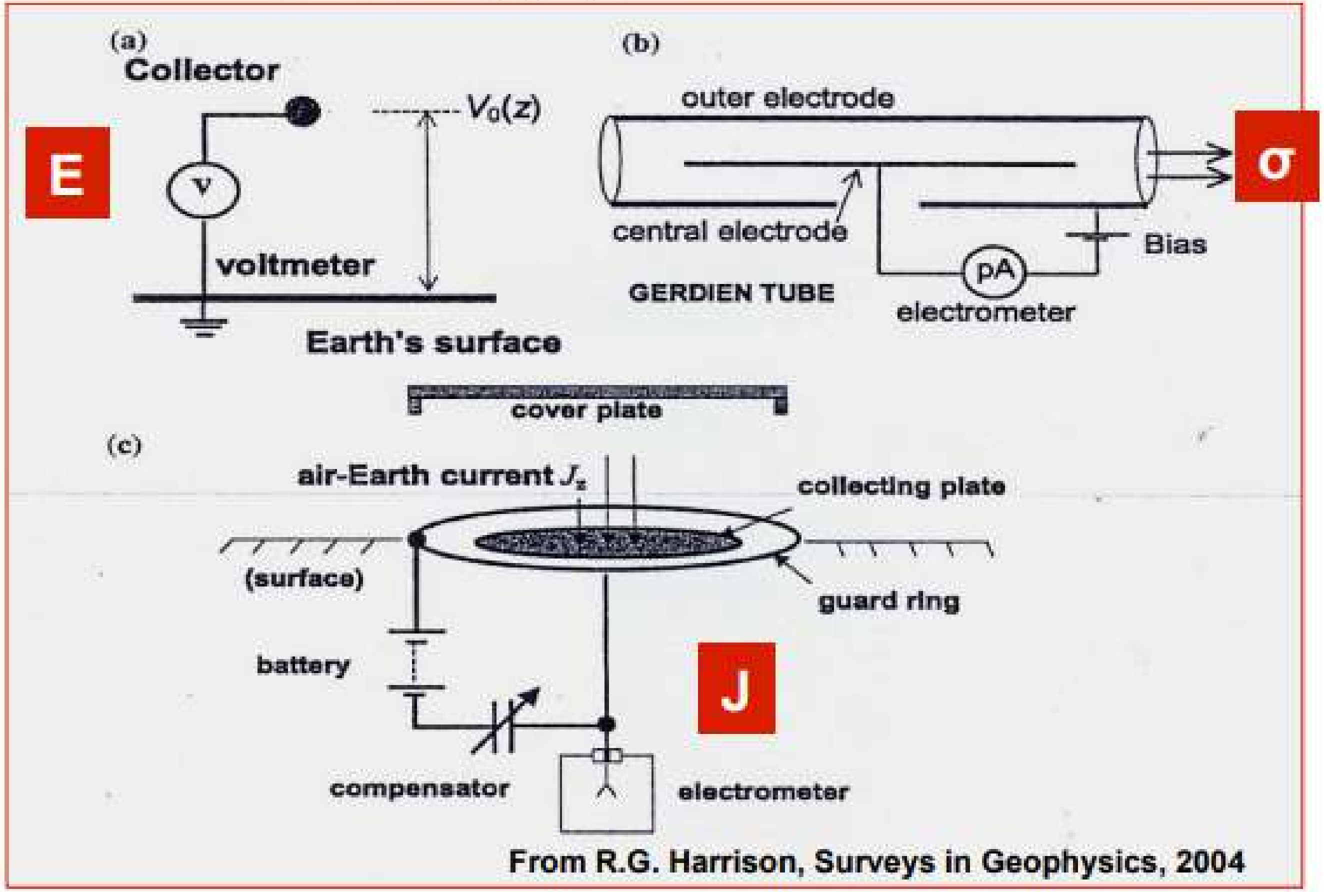
When To Tune and Where

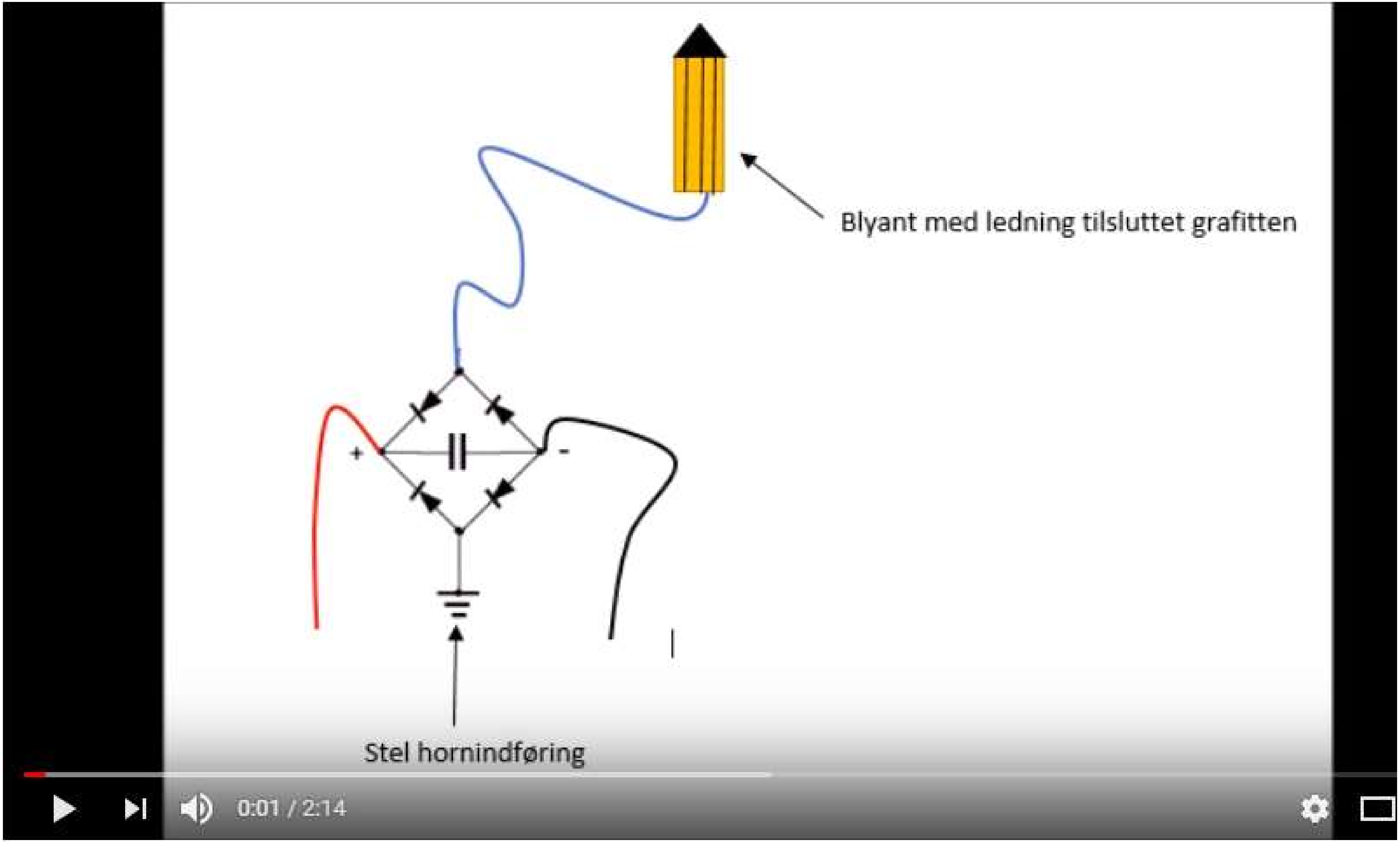
● Until you have had considerable experience in short wave tuning, it is well to confine your efforts to the four bands indicated on the dial. These may look small, compared to the total length of the dial, but they contain the best "plums" among the foreign stations and many faint ones which, at first, you will probably pass unnoticed until you learn to tune slowly and carefully, intent upon identifying each slight "swish", which may be a station.



Copyright 1935 by H. Gernsback.


From M.J. Rycroft et al., JASTP, 2000
ELECTRIC CURRENTS
magnetosphere
thermosphere
60 - 80
+250 kV
IONOSPHERE
mesosphere
ALTITUDE, km
E
FAIR
WEATHER
ATMOSPHERIC ELECTRICITY
stratosphere
J
σ
+100 MV
−100 MV
130 Vm⁻¹
free troposphere
boundary layer
0 MV
mountain
EARTH'S SURFACE

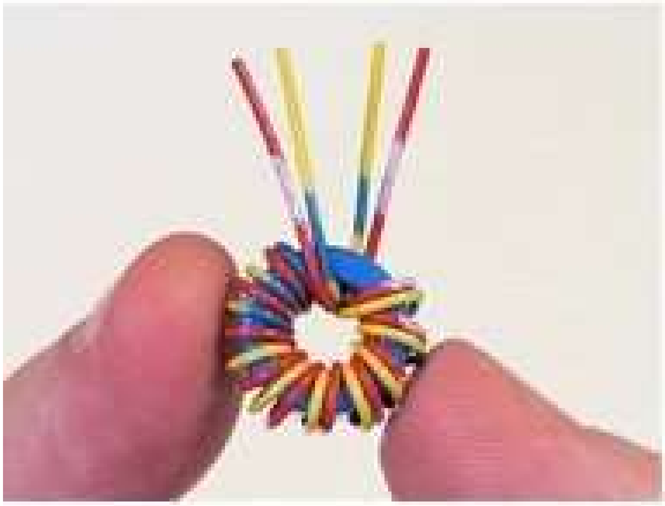

(a)
Collector
$V_0(z)$
E
voltmeter
Earth's surface
(b)
outer electrode
σ
central electrode
Bias
pA
GERDIEN TUBE
electrometer
cover plate
(c)
air-Earth current J_z
collecting plate
(surface)
guard ring
battery
J
compensator
electrometer
From R.G. Harrison, Surveys in Geophysics, 2004



tesla radiant collector/ion collector with pencil

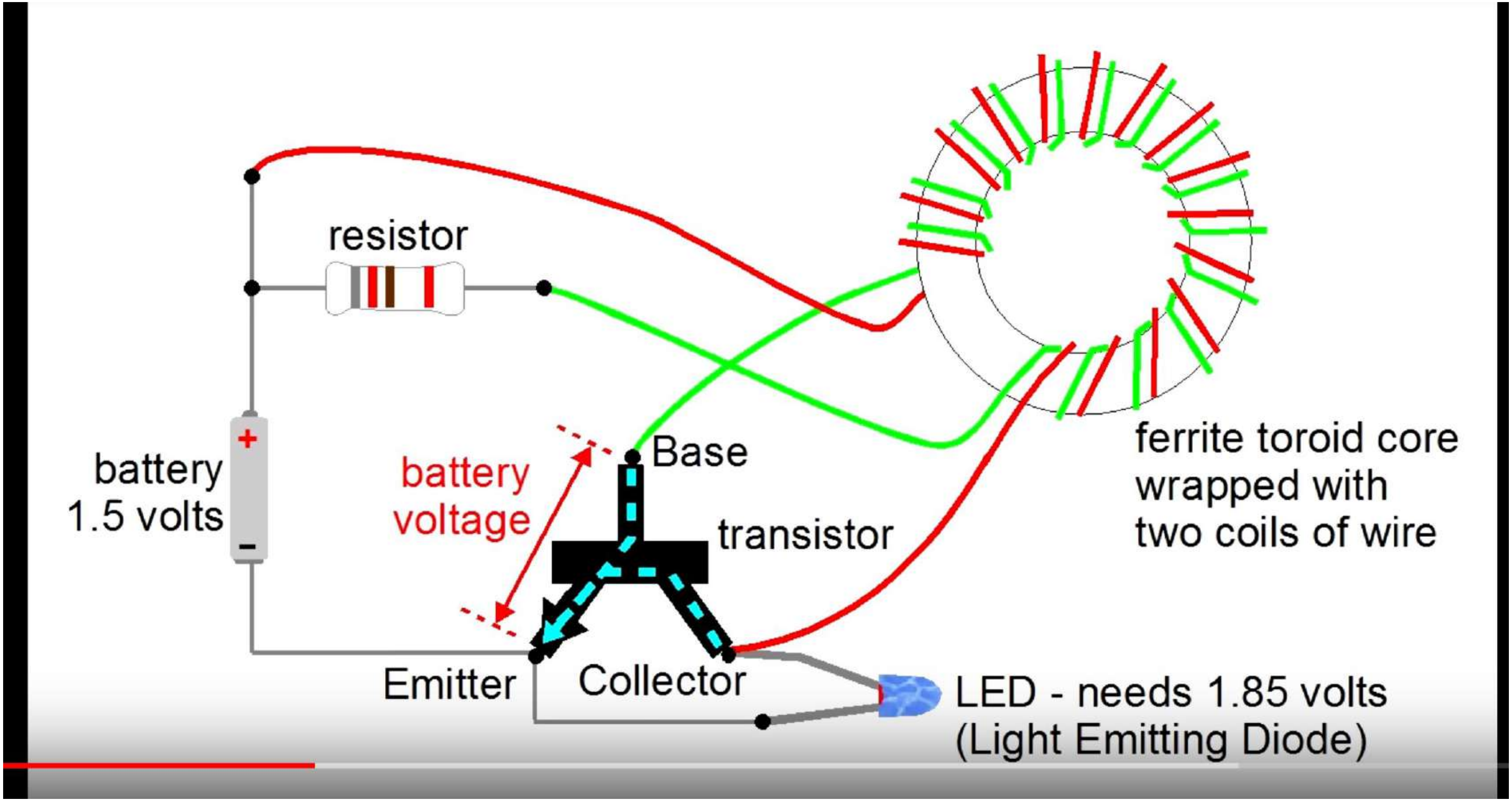
Keeping the two wires together, make a few more turns through the center.

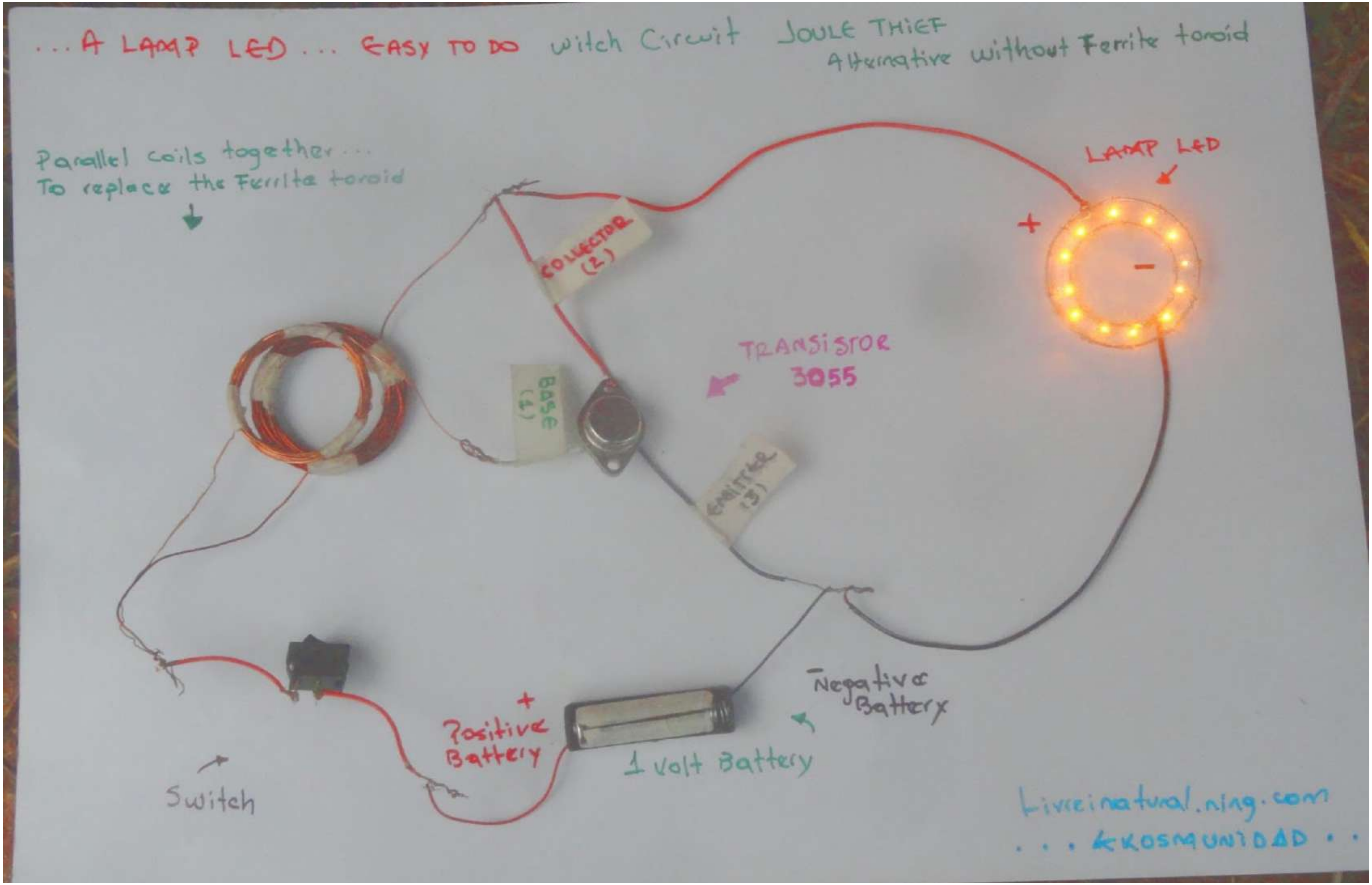
Keep winding until you fit as many turns as will fit in a single layer around the toroid, typically 7-10 turns with thin insulated wire.



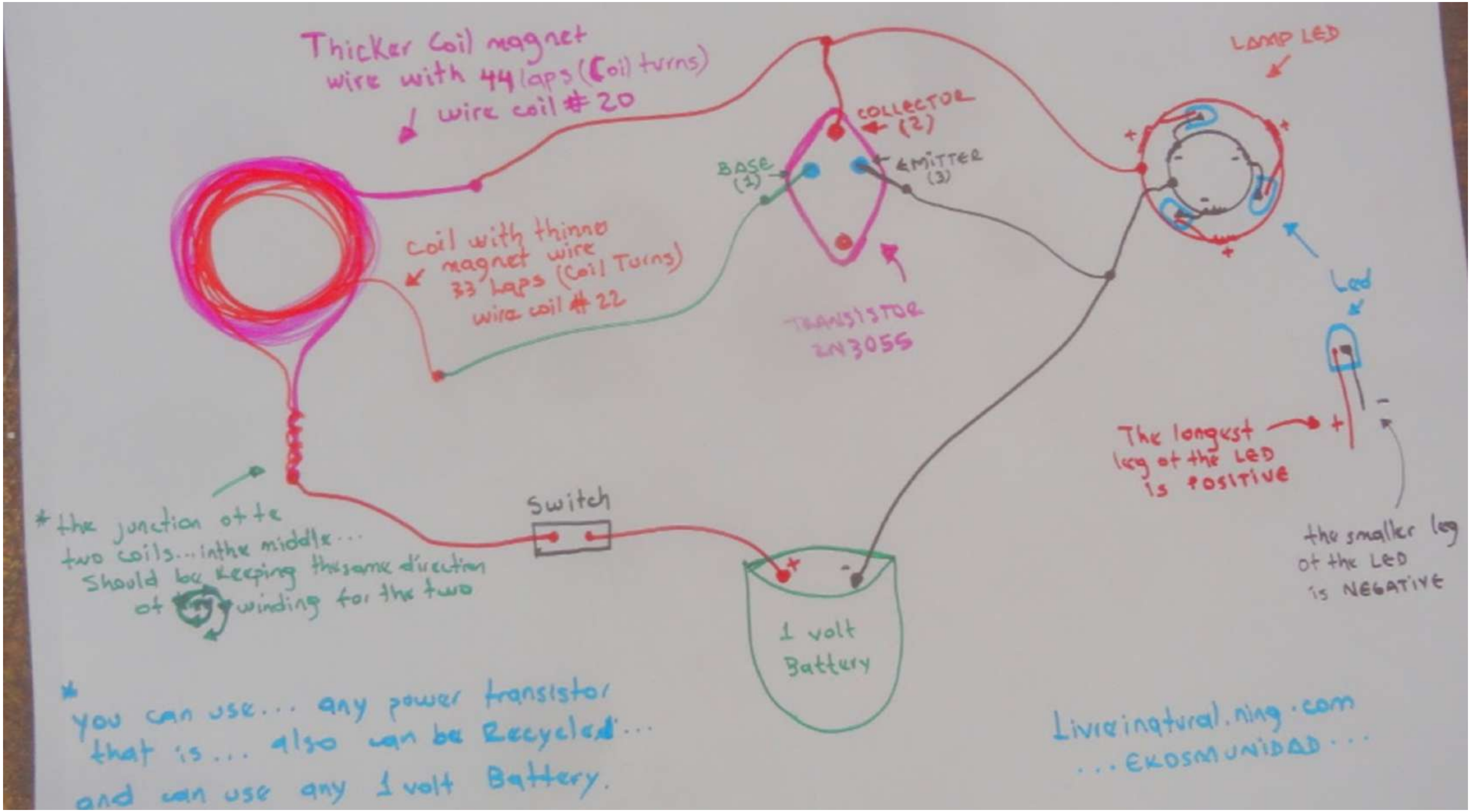
Clip the wire leads down. Note that we have two pairs of wires: one coming out the front, and one coming out the back.

Strip the wire ends. Take one wire from each pair *of different color* and attach them together.


resistor
battery
1.5 volts
+
-
battery
voltage
Base
transistor
Emitter
Collector
ferrite toroid core
wrapped with
two coils of wire
LED - needs 1.85 volts
(Light Emitting Diode)

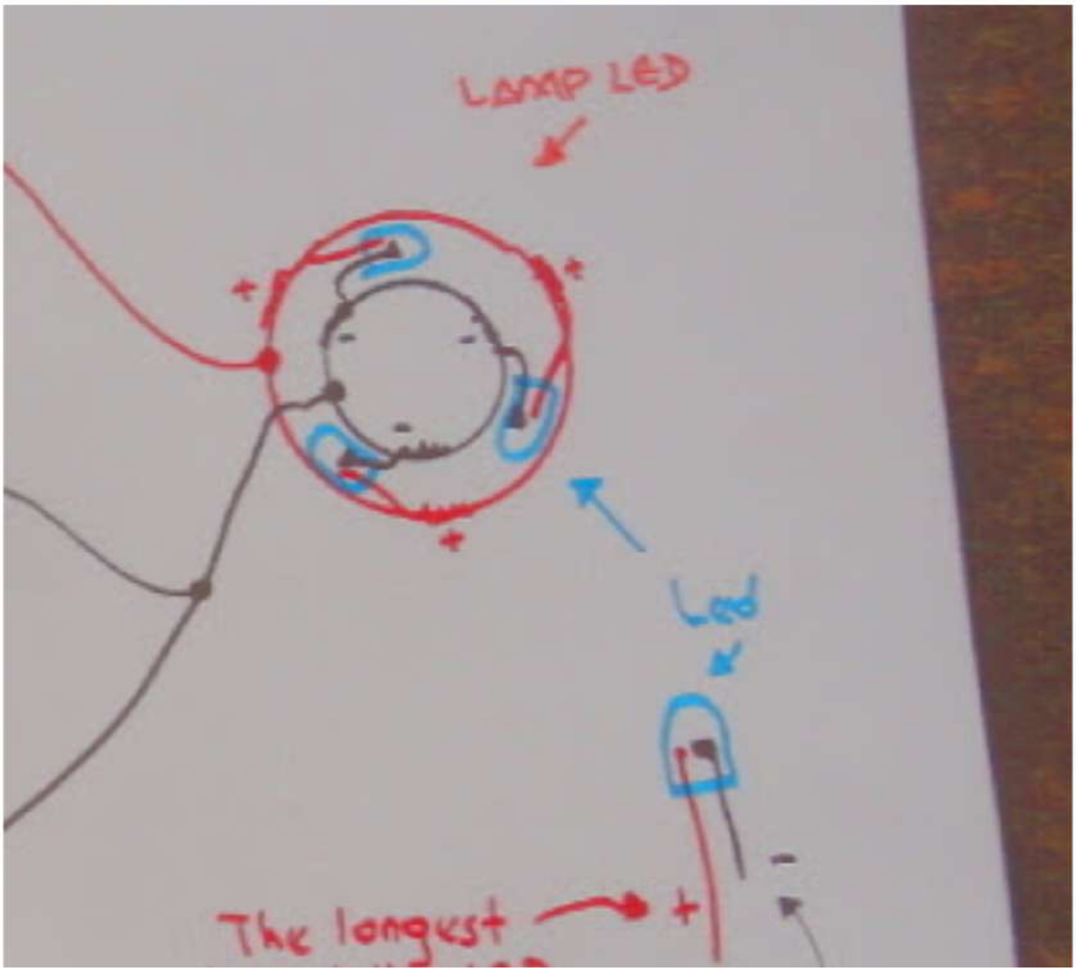


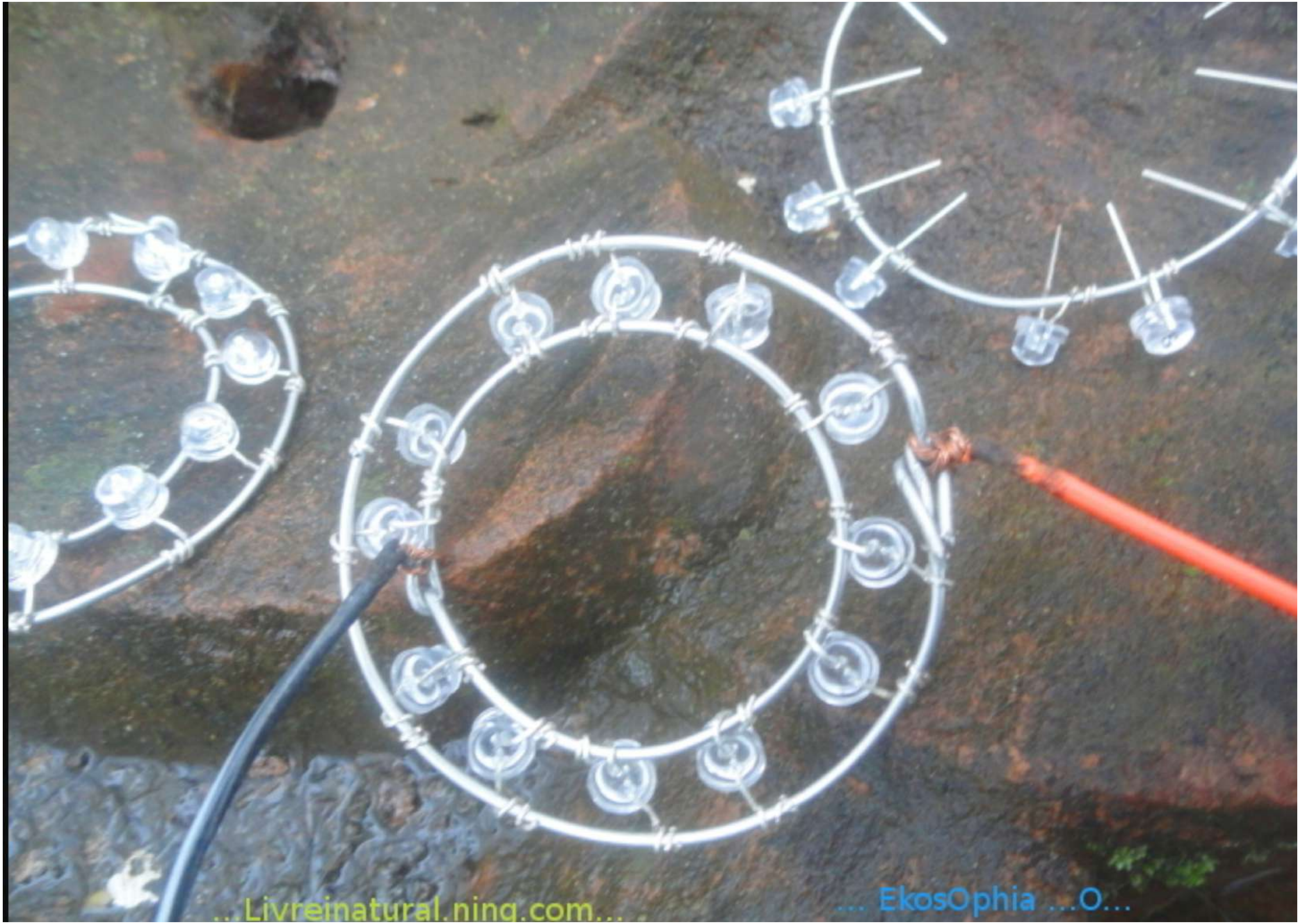
... A LAMP LED ... EASY TO DO witch Circuit JOULE THIEF
Alternative without Ferrite toroid
Parallel coils together...
To replace the Ferrite toroid
COLLECTOR (2)
BASE (1)
EMITTER (3)
TRANSISTOR
3055
LAMP LED
+
-
+
Positive Battery
Negative Battery
1 volt Battery
Switch
Livreinatural.ning.com
... EKOSMUNIDAD ..



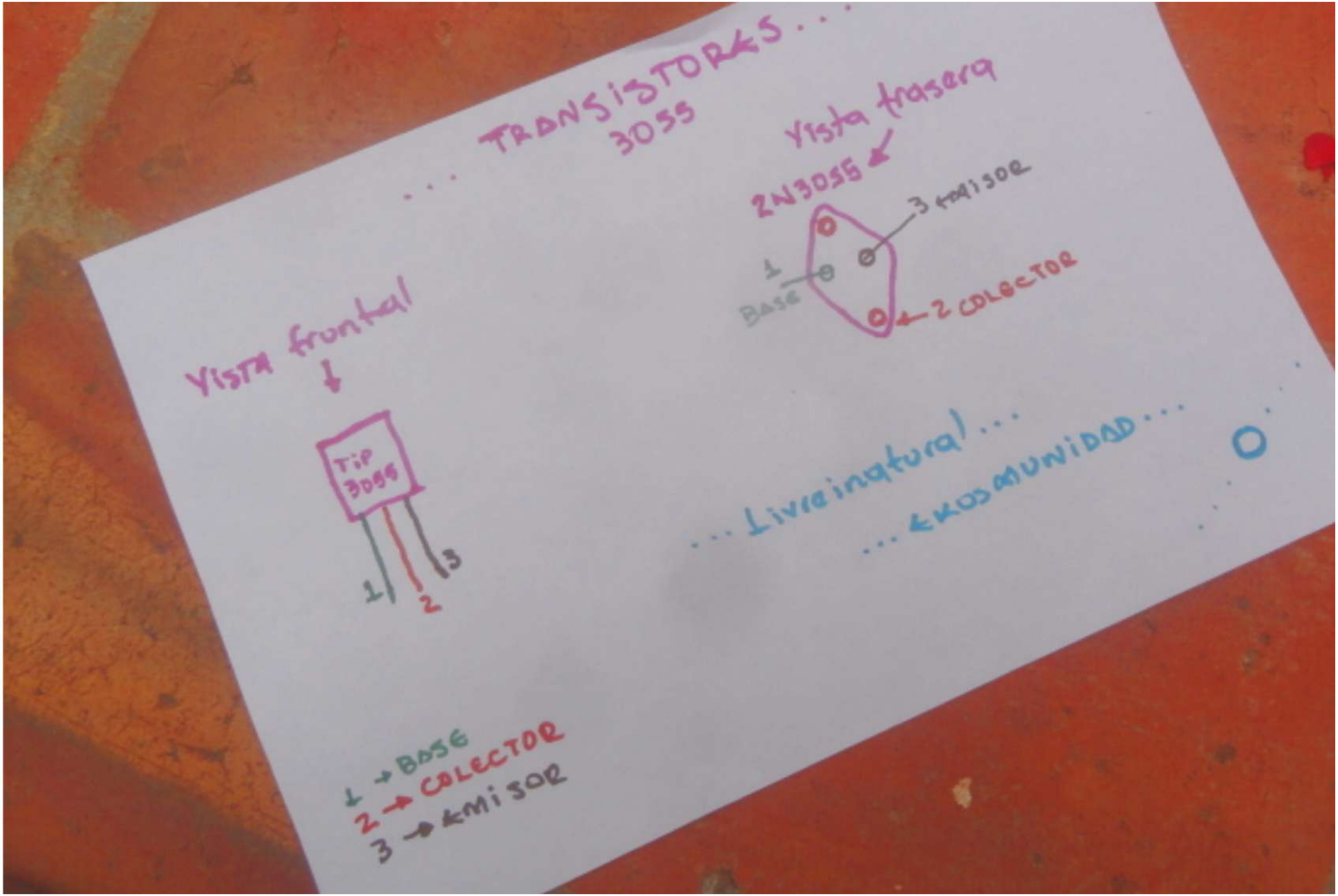
Thicker Coil magnet wire with 44 laps (Coil turns) wire coil # 20
COLLECTOR (2)
BASE (1)
EMITTER (3)
LAMP LED
coil with thinner magnet wire 33 laps (Coil Turns) wire coil # 22
TRANSISTOR 2N3055
Led
The longest leg of the LED is POSITIVE
Switch
* the junction of te two coils... in the middle... Should be keeping the same direction of winding for the two
1 volt Battery
the smaller leg of the LED is NEGATIVE
* you can use... any power transistor that is... also can be Recycled... and can use any 1 volt Battery.
Livreinatural.ning.com
...EKOSMUNIDAD...

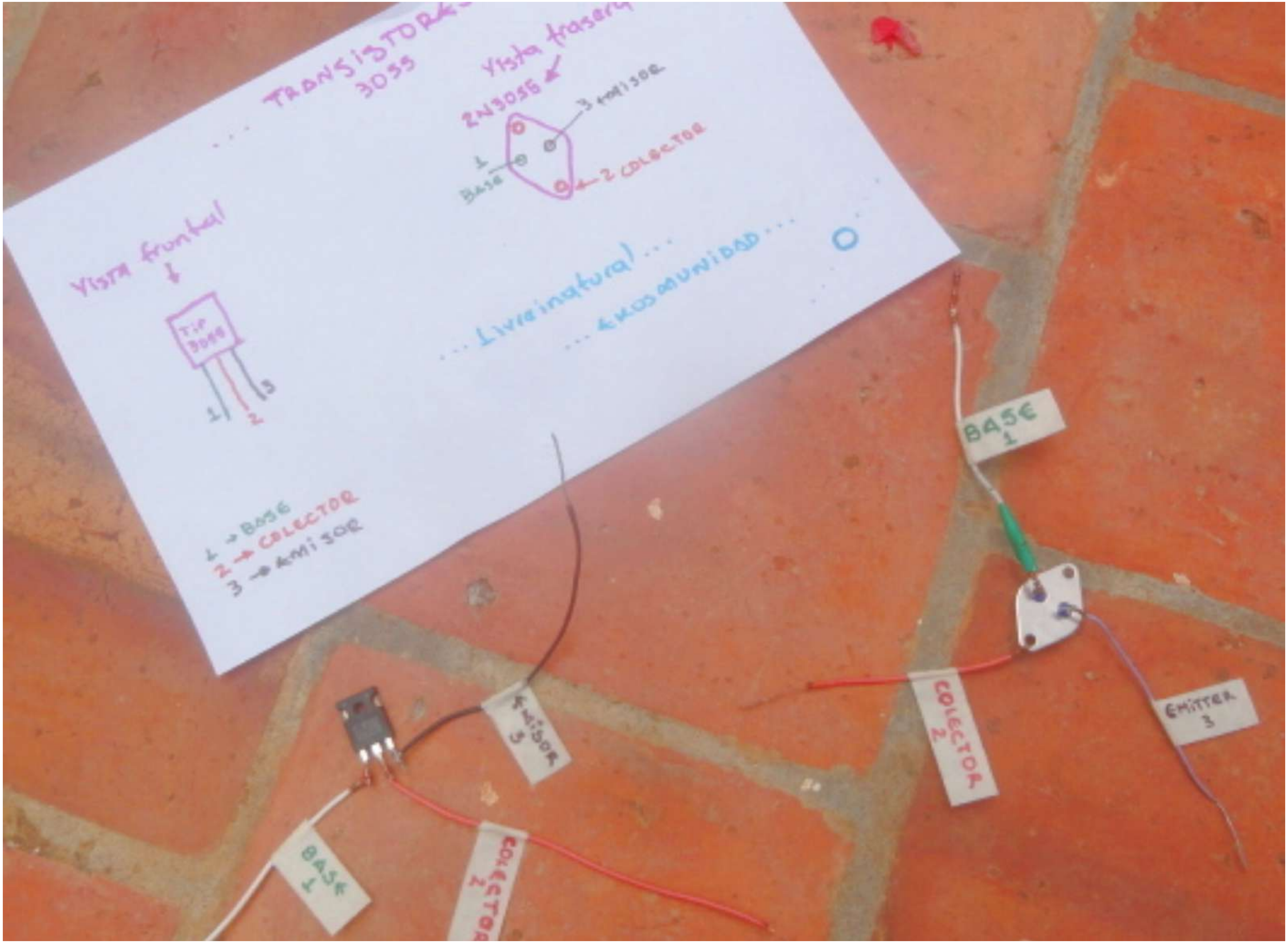

...OOO... O ...OOO...


Lamp LED
+
+
+
-
-
-
Led
-
The longest
+


...Livreinatural.ning.com...
... EkosOphia ...O...

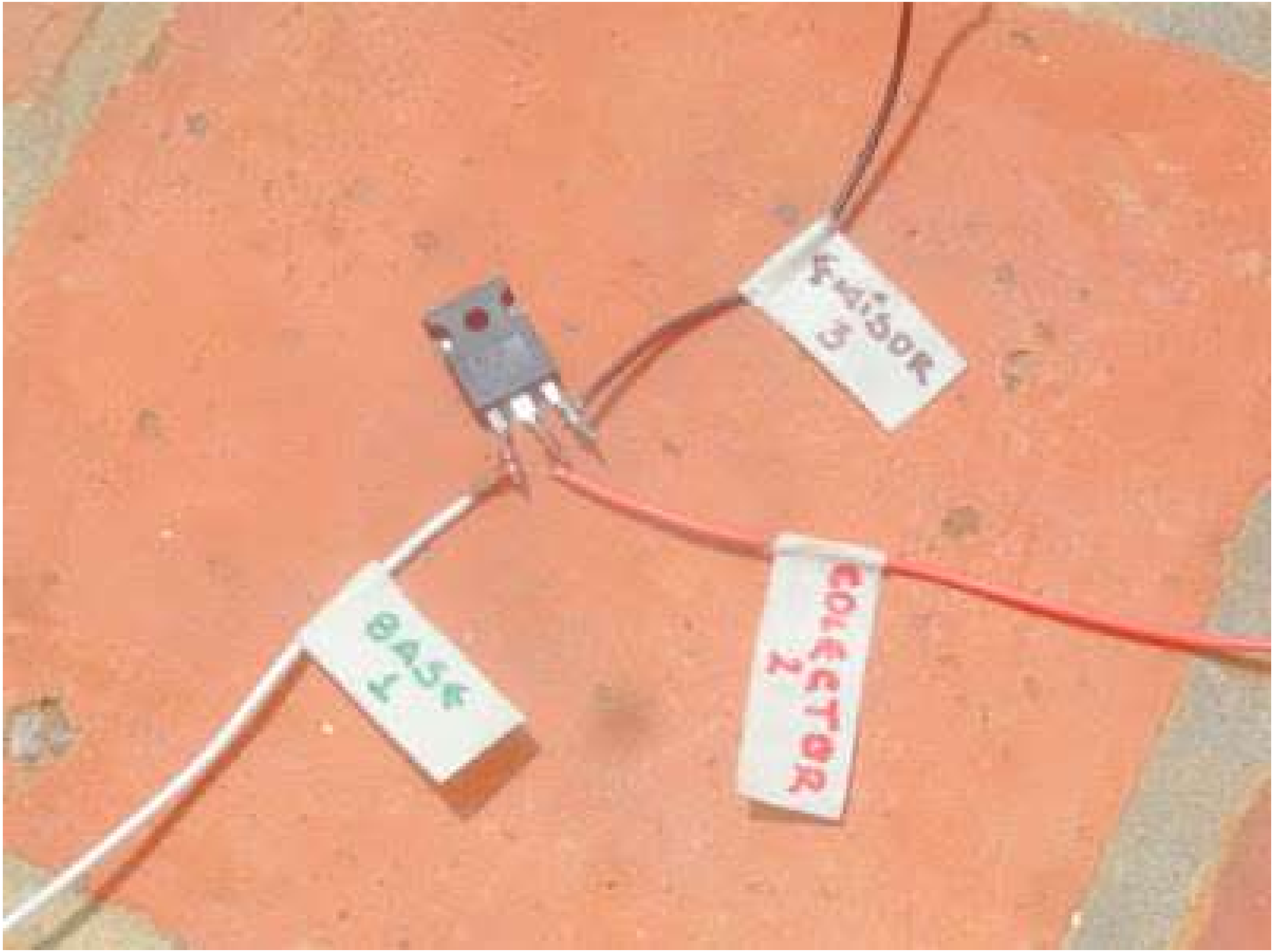

Livreinatural.ning.com...

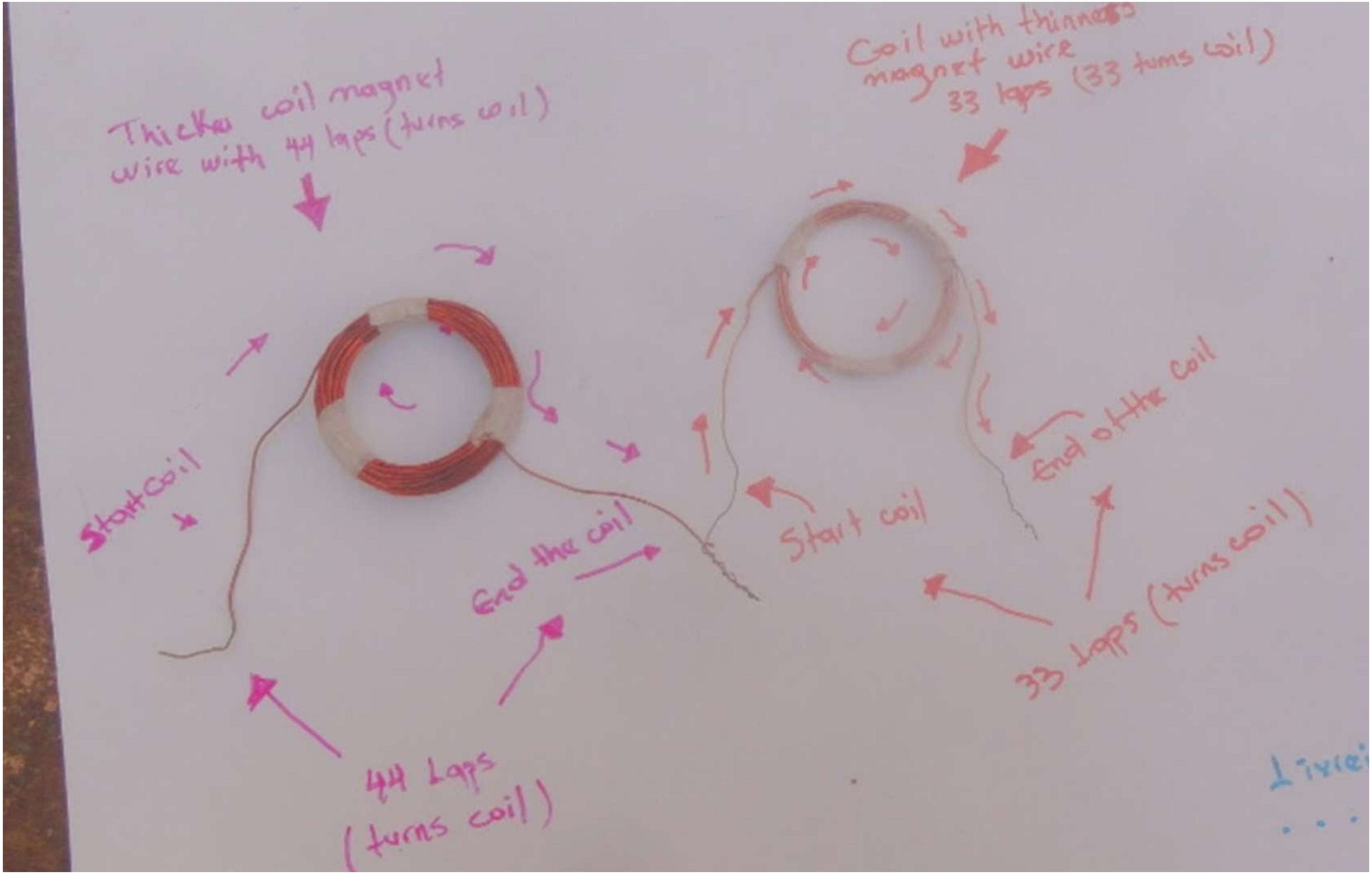

... TRANSISTORES ...
3055
Vista trasera
2N3055
3 EMISOR
1
BASE
2 COLECTOR
Vista frontal
TIP
3055
1
2
3
1 → BASE
2 → COLECTOR
3 → EMISOR
... Livreinatural ...
... EKOSMUNIDAD ...

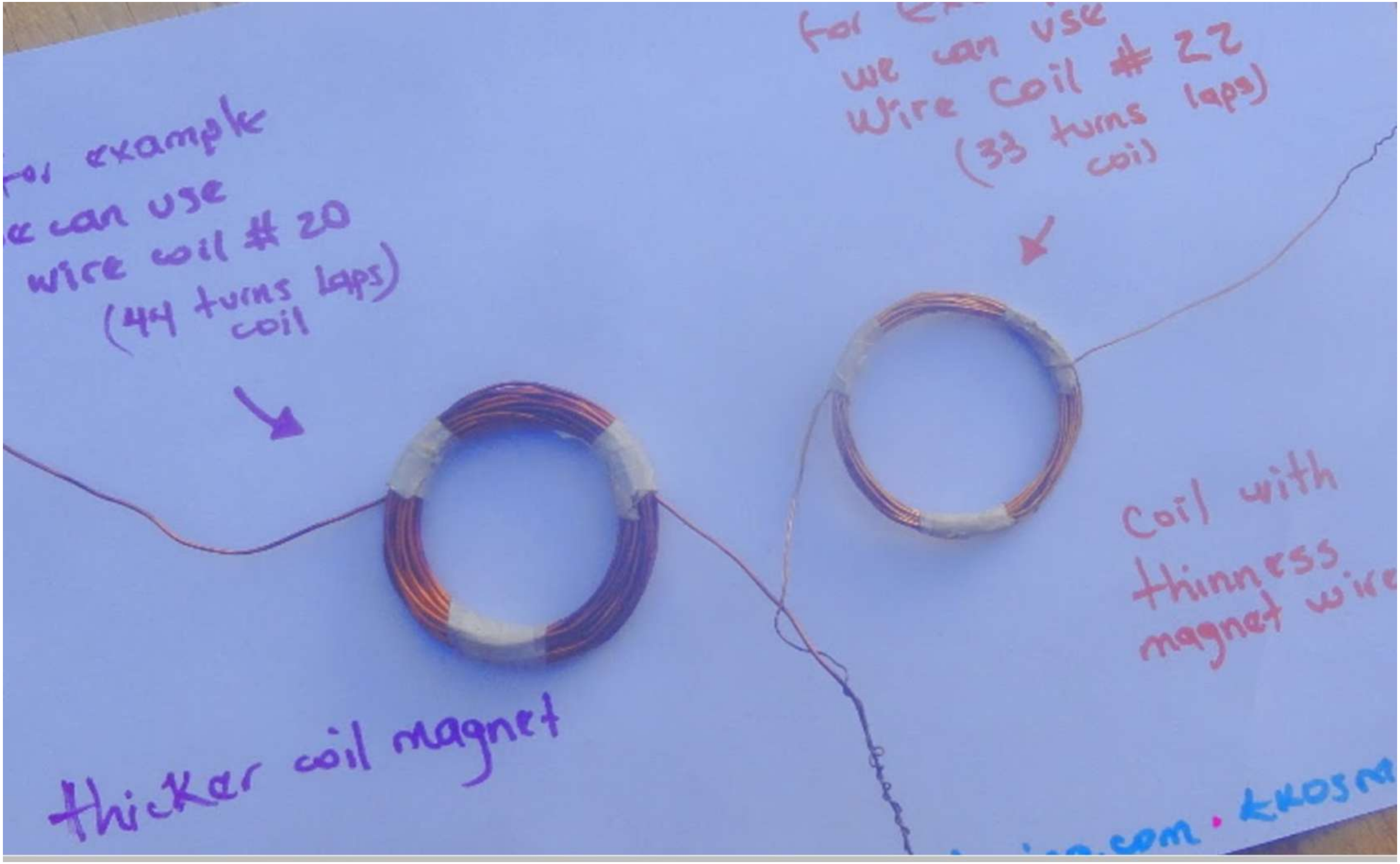


TRANSISTORES
3055
Vista trasera
2N3055
3 emisor
2 colector
1
BASE
Vista frontal
TIP
3055
1
2
3
...Liveinatura)...
...ekosomunidad...
1 → BASE
2 → COLECTOR
3 → EMISOR
BASE
1
COLECTOR
2
EMITTER
3
EMISOR
3
BASE
1
COLECTOR
2

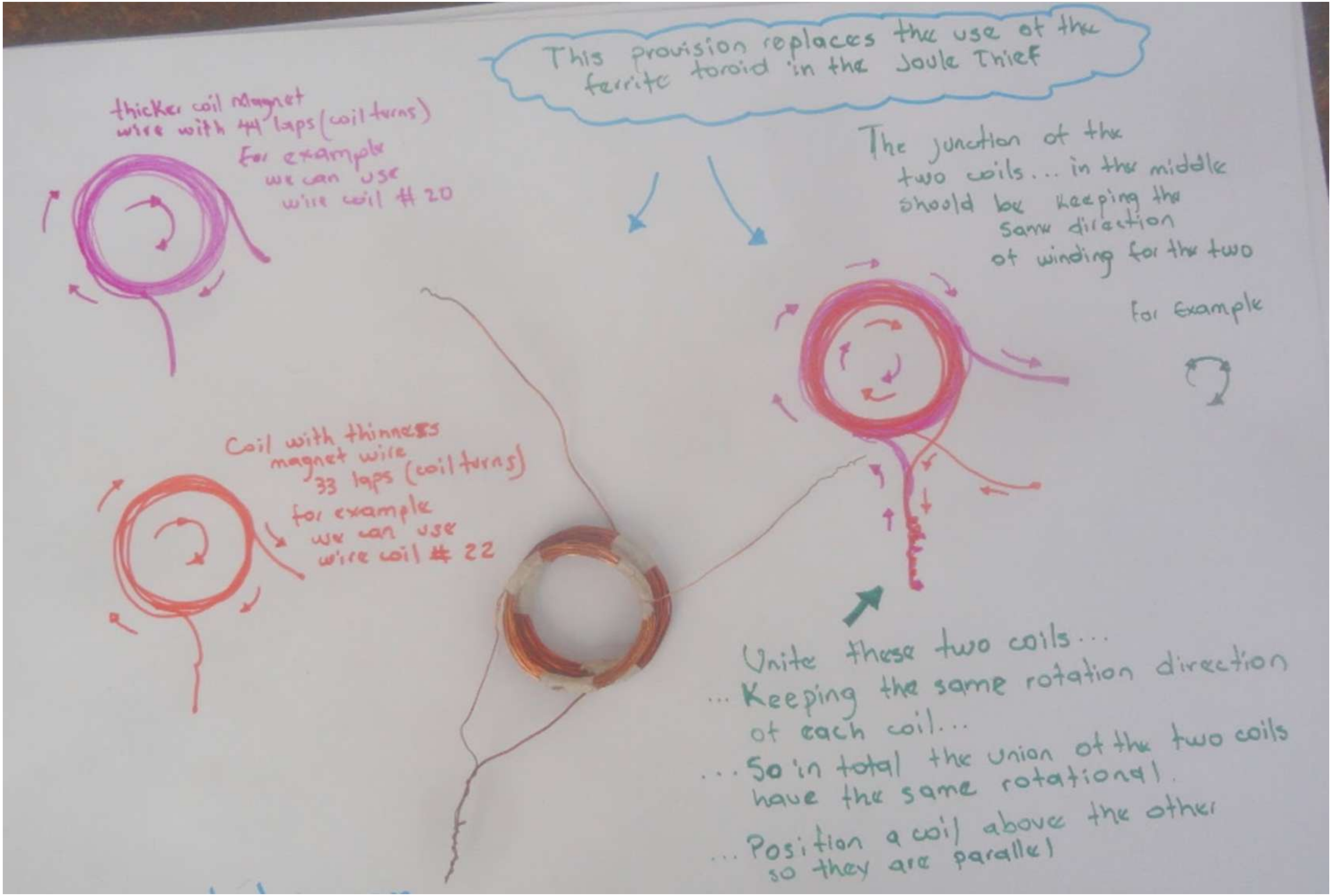

...Livrenatural.ning.com...

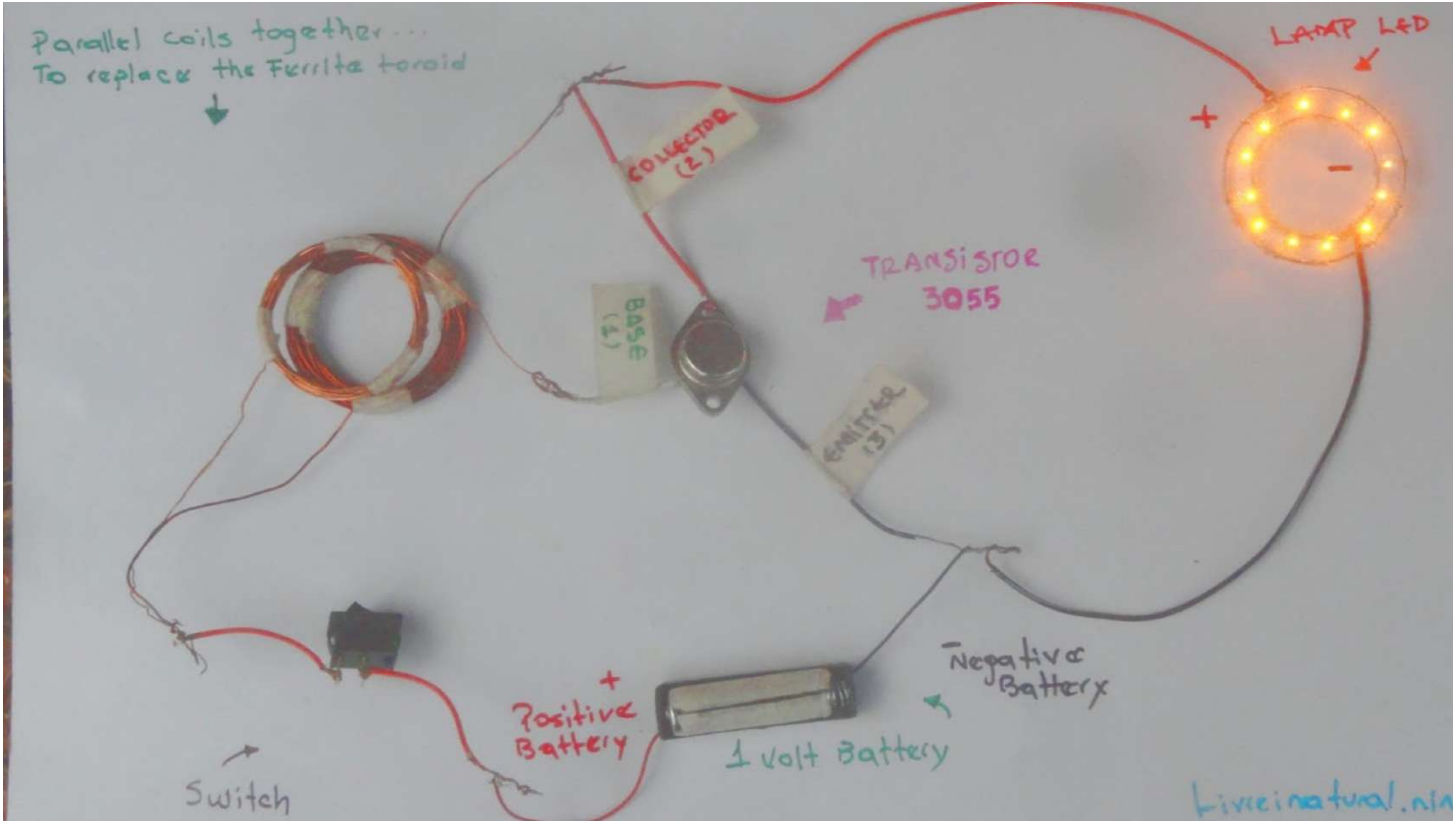

BASE
1
COLLECTOR
2

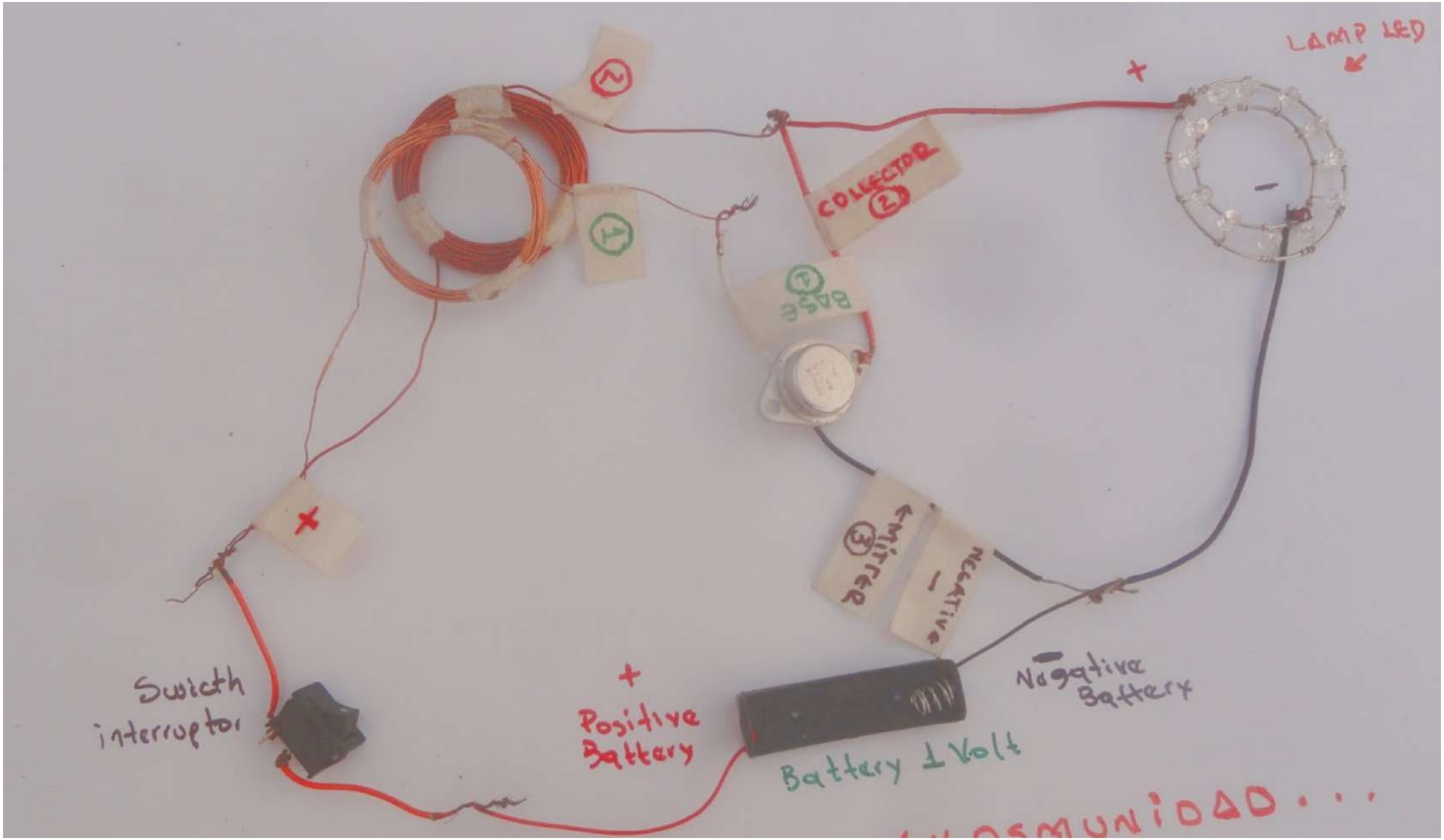

Thicker coil magnet wire with 44 laps (turns coil)
Coil with thinness magnet wire 33 laps (33 turns coil)
Start coil
End the coil
44 laps (turns coil)
Start coil
End of the coil
33 laps (turns coil)

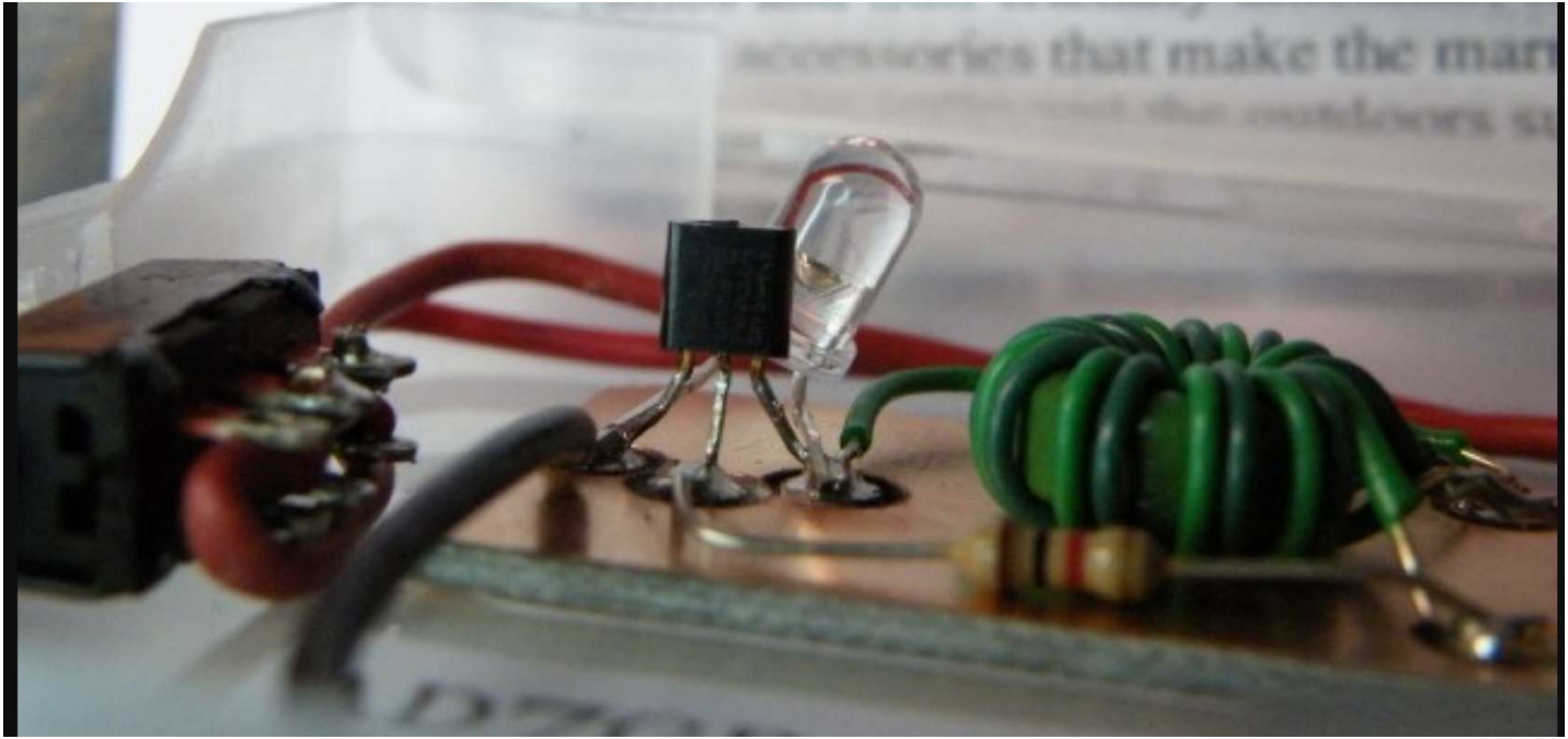


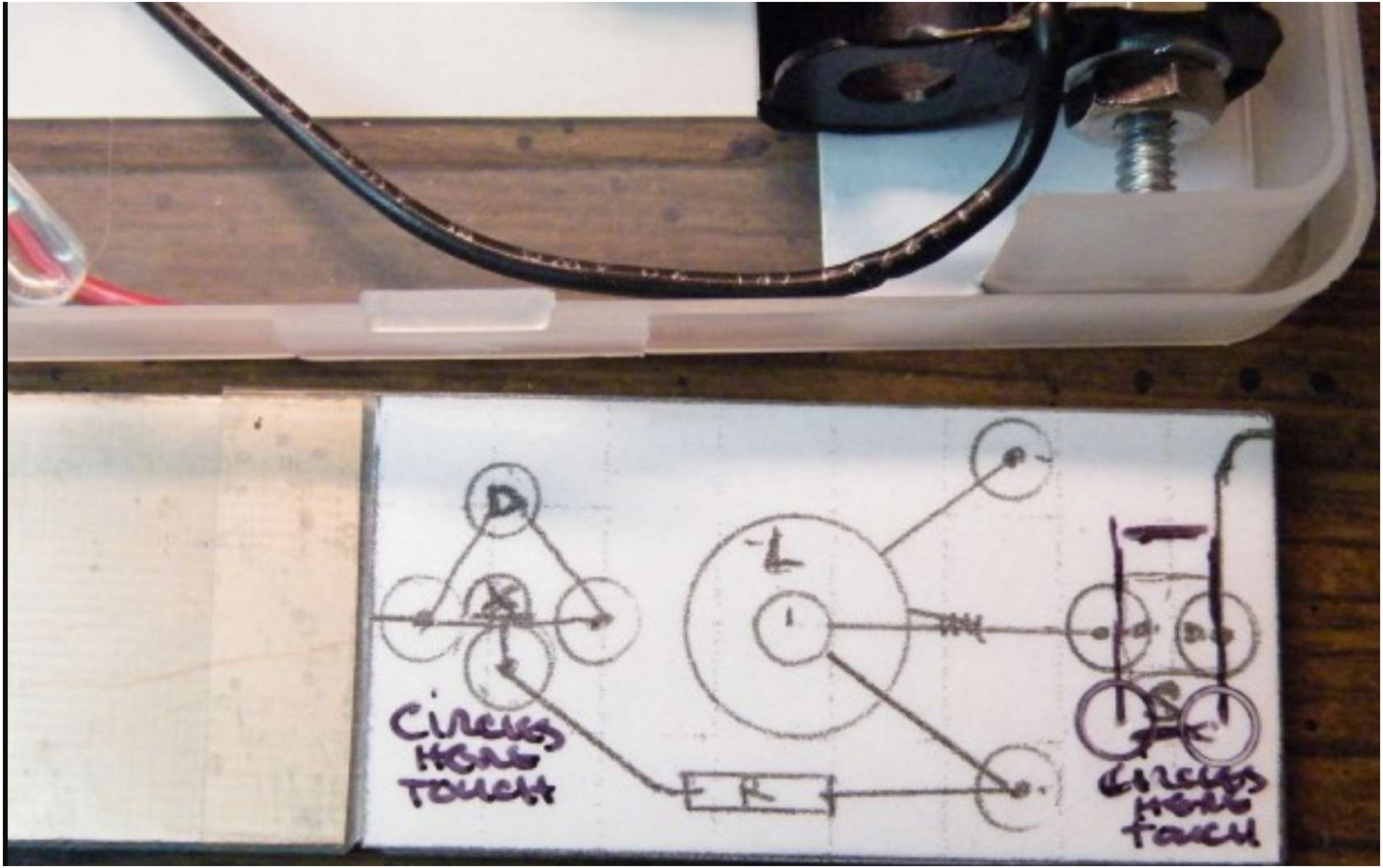
for example
we can use
wire coil # 20
(44 turns laps)
coil
thicker coil magnet
we can use
wire Coil # 22
(33 turns laps)
coil)
Coil with
thinness
magnet wire

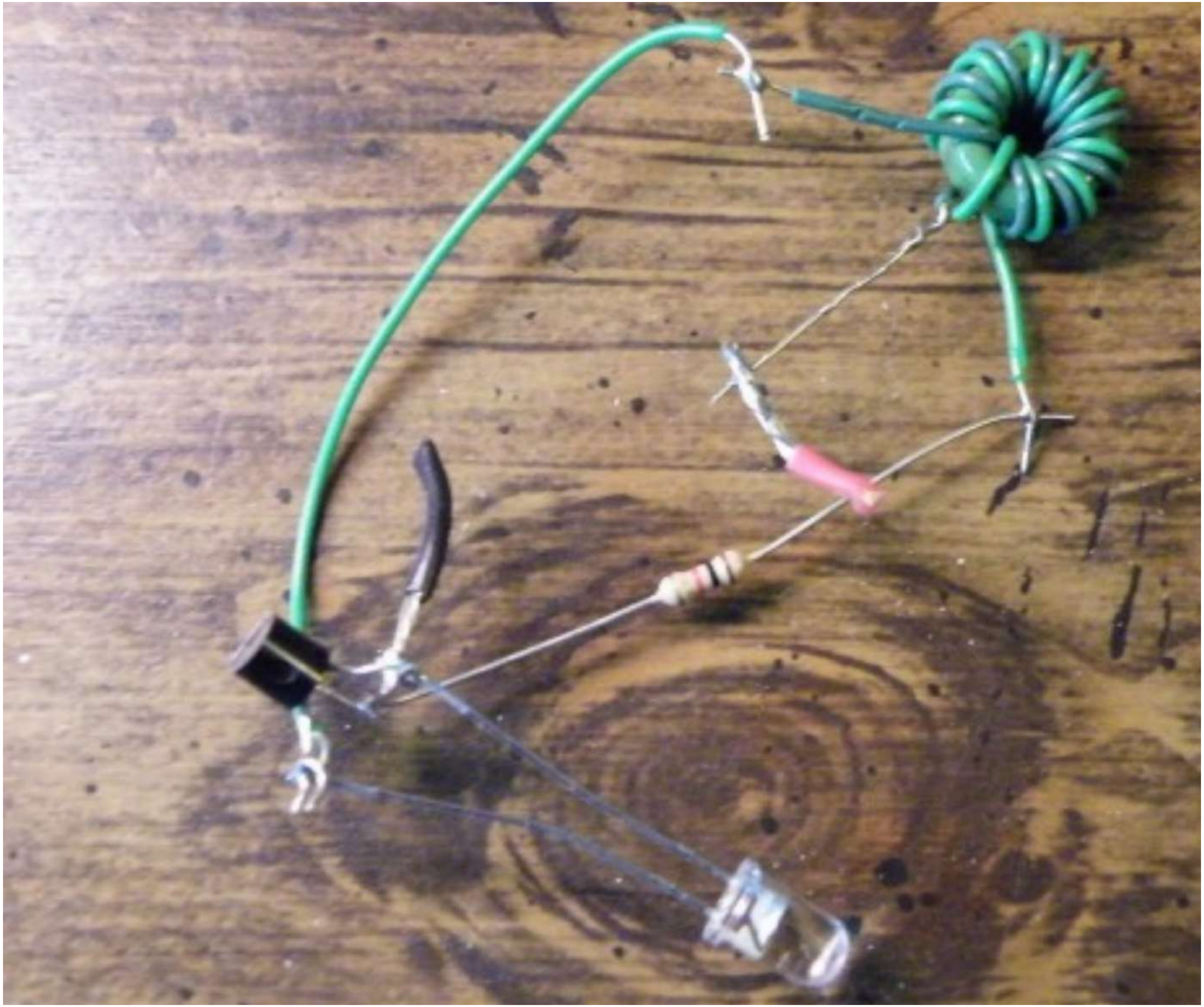

This provision replaces the use of the ferrite toroid in the Joule Thief
thicker coil magnet wire with 44 laps (coil turns)
for example we can use wire coil # 20
Coil with thinness magnet wire 33 laps (coil turns)
for example we can use wire coil # 22
The junction of the two coils... in the middle should be keeping the same direction of winding for the two
for Example
Unite these two coils...
...Keeping the same rotation direction of each coil...
...So in total the union of the two coils have the same rotational.
...Position a coil above the other so they are parallel

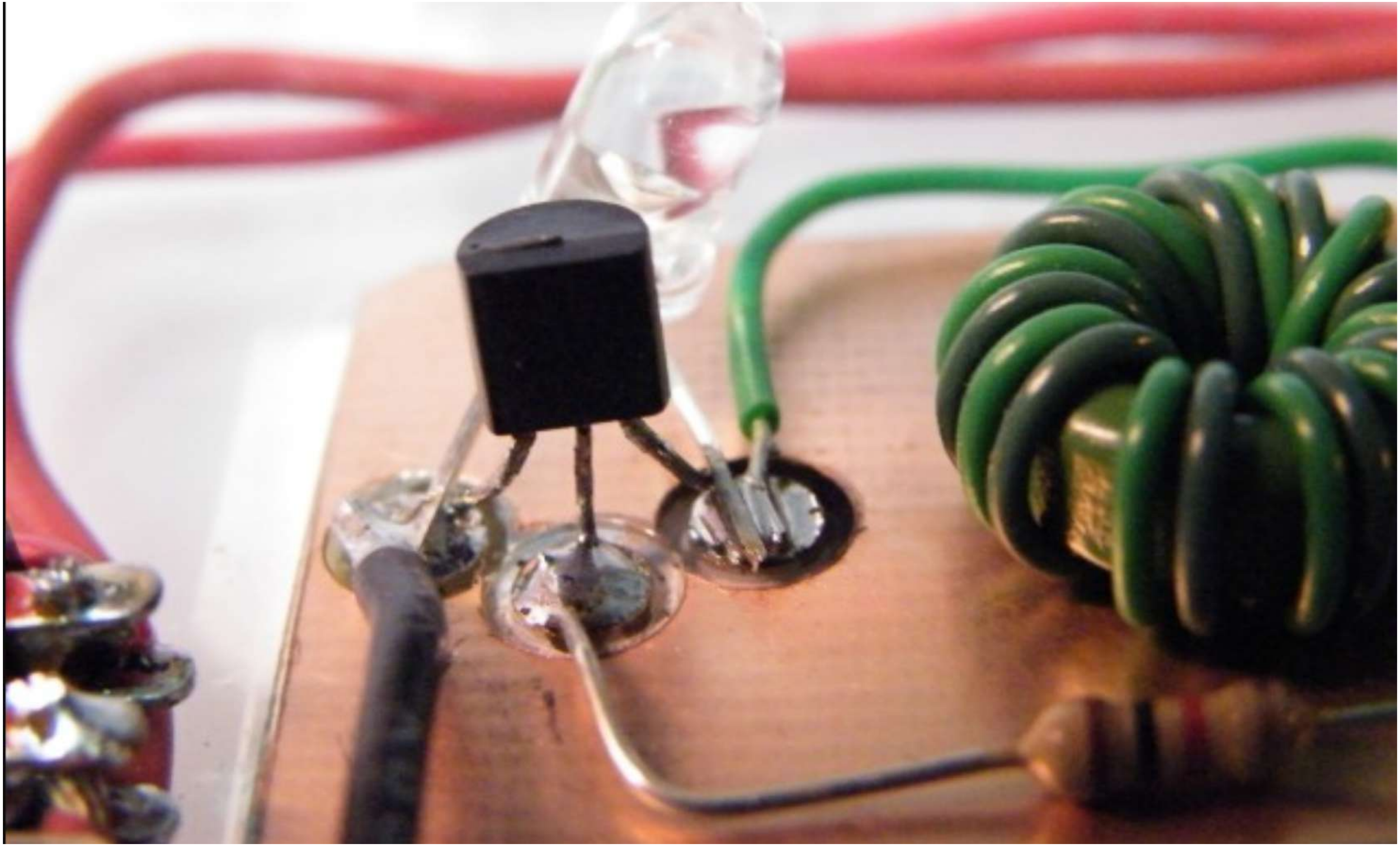

Parallel coils together...
To replace the Ferrite toroid
COLLECTOR (2)
LAMP LED
+
-
TRANSISTOR
3055
BASE (1)
EMITTER (3)
Negative Battery
+
Positive Battery
1 volt Battery
Switch


LAMP LED
+
2
COLLECTOR 2
1
BASE
+
EMITTER 3
NEGATIVE –
Swicth
interruptor
+
Positive
Battery
Battery 1 Volt
Negative
Battery

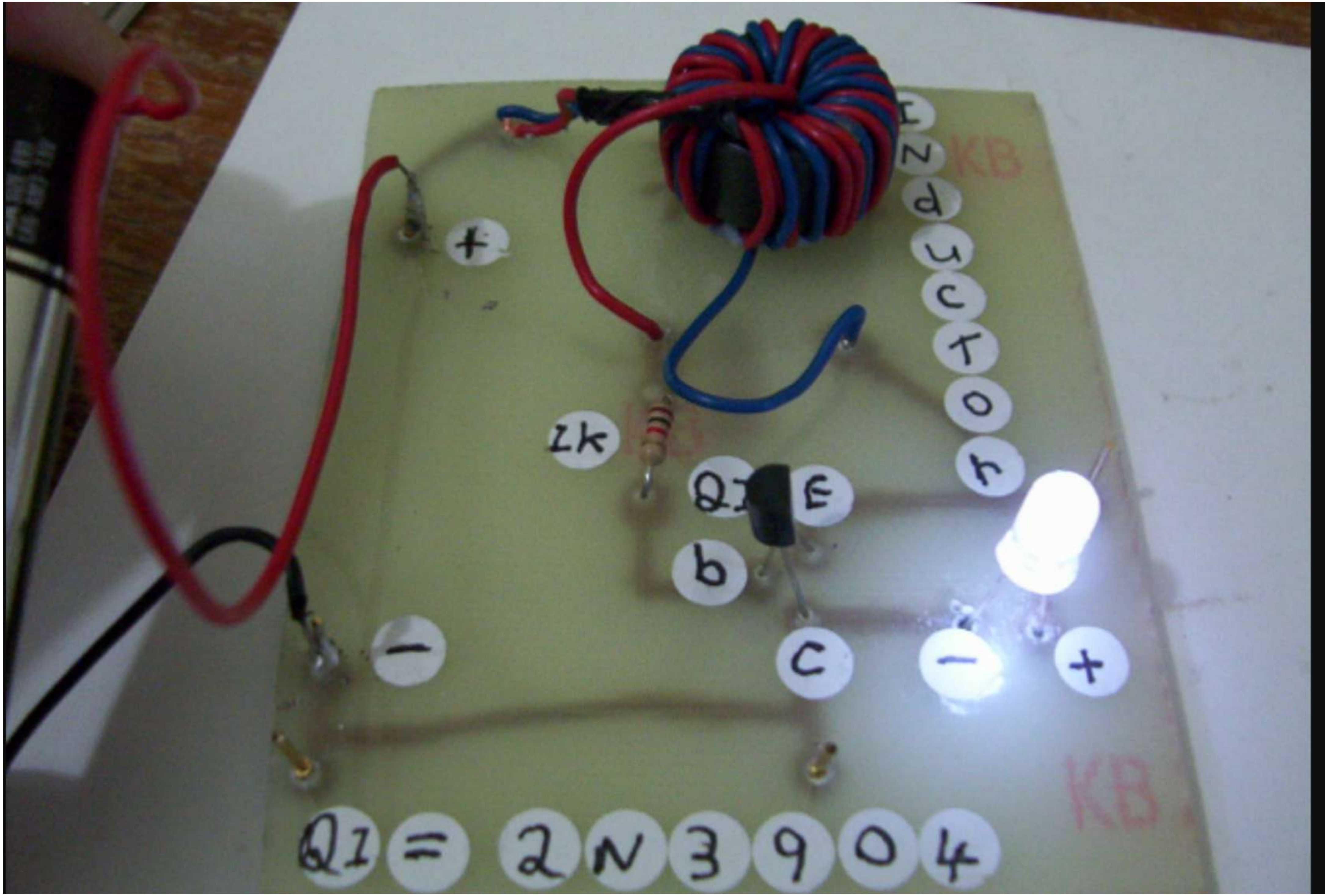

accessories that make the

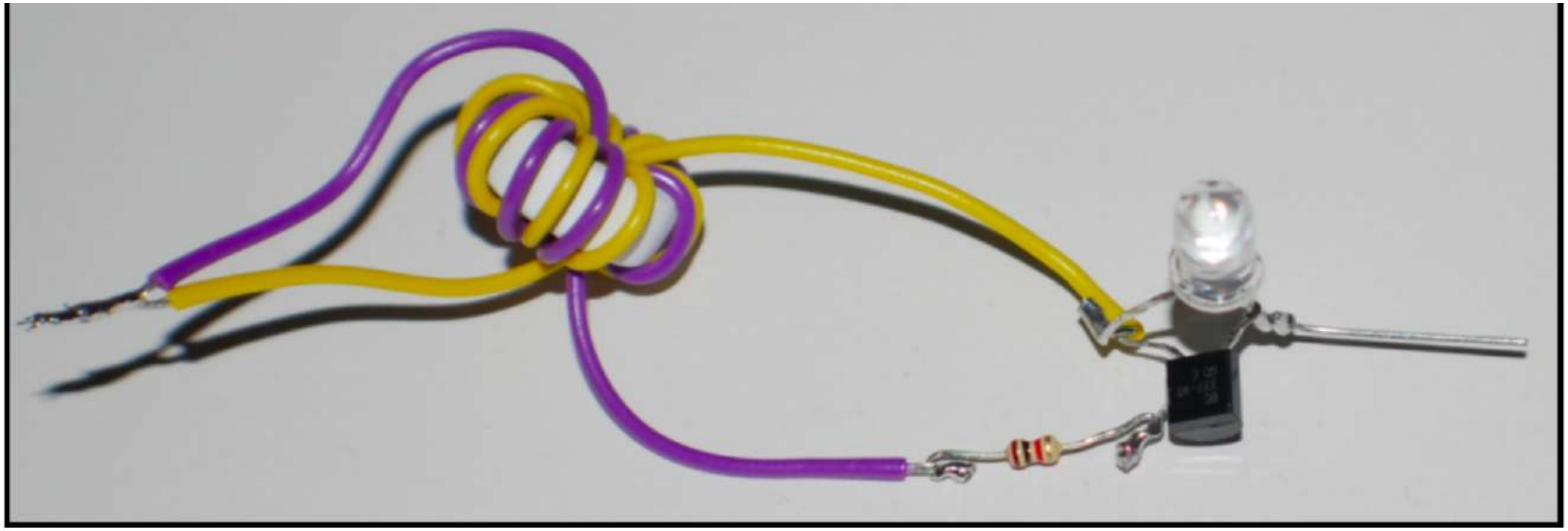

D
L
R
S
Circles here touch
Circles here touch



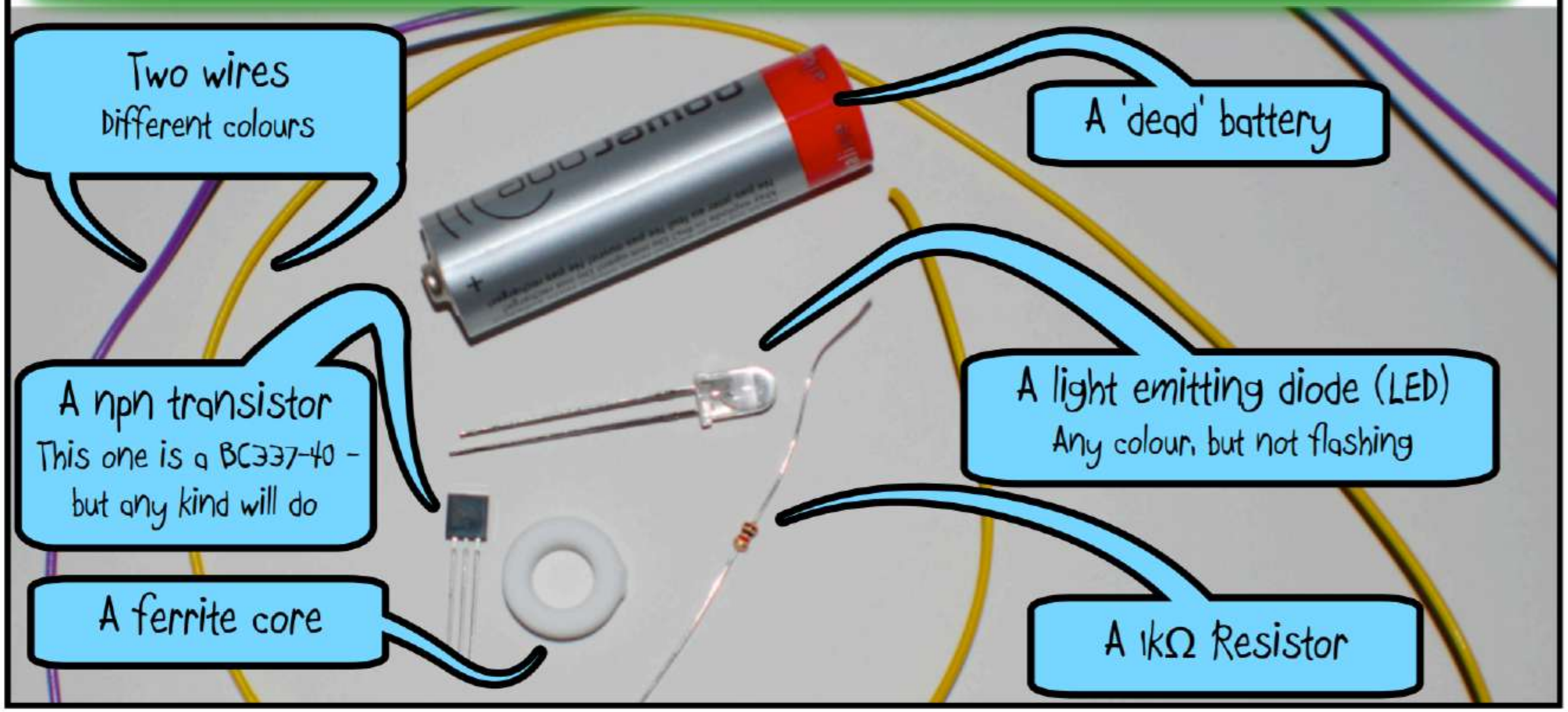



AD7GR - Joule-Thief
January 2009
Panasonic
DIGITAL POWER


+
Inductor
2k
Q1
E
b
C
–
–
+
Q1 = 2N3904
KB
KB

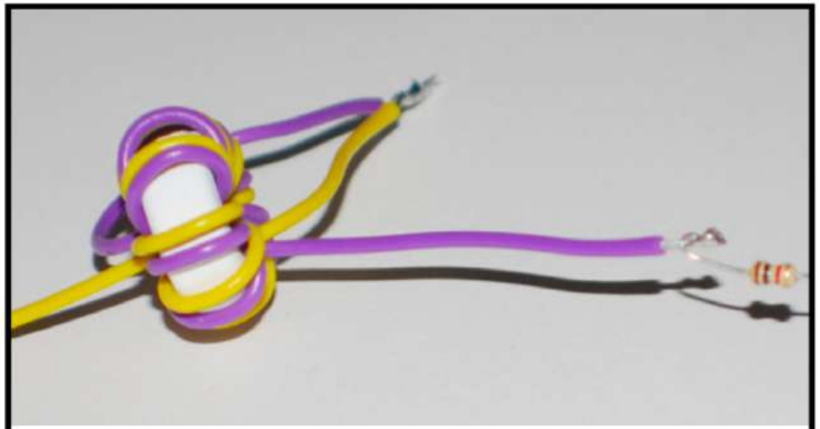


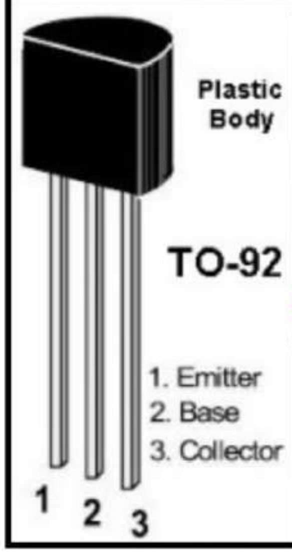
… and these are the components you need:

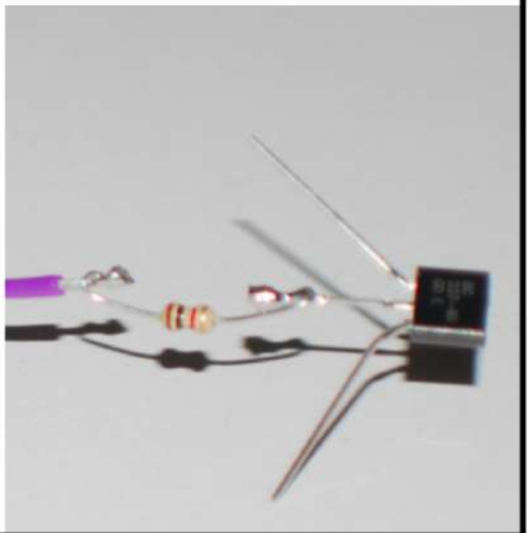


Solder the 1kΩ Resistor to either of the unsoldered wires coming from the inductor.

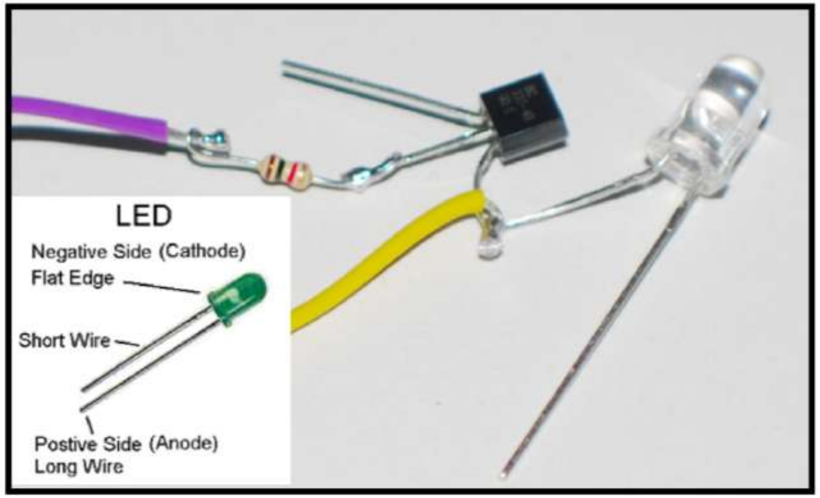
Solder the other end of the resistor to the base lead of the transistor.
On the transistor used here, that is the middle lead.
Cut off the spare ends of leads.







Solder the anode of the LED (the longer leg) to the collector lead of the transistor AND the remaining wire from the inductor.
Cut off the ends of the leads.

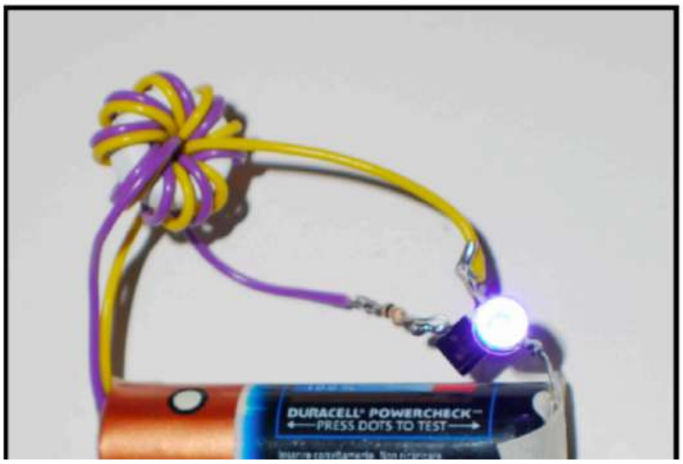


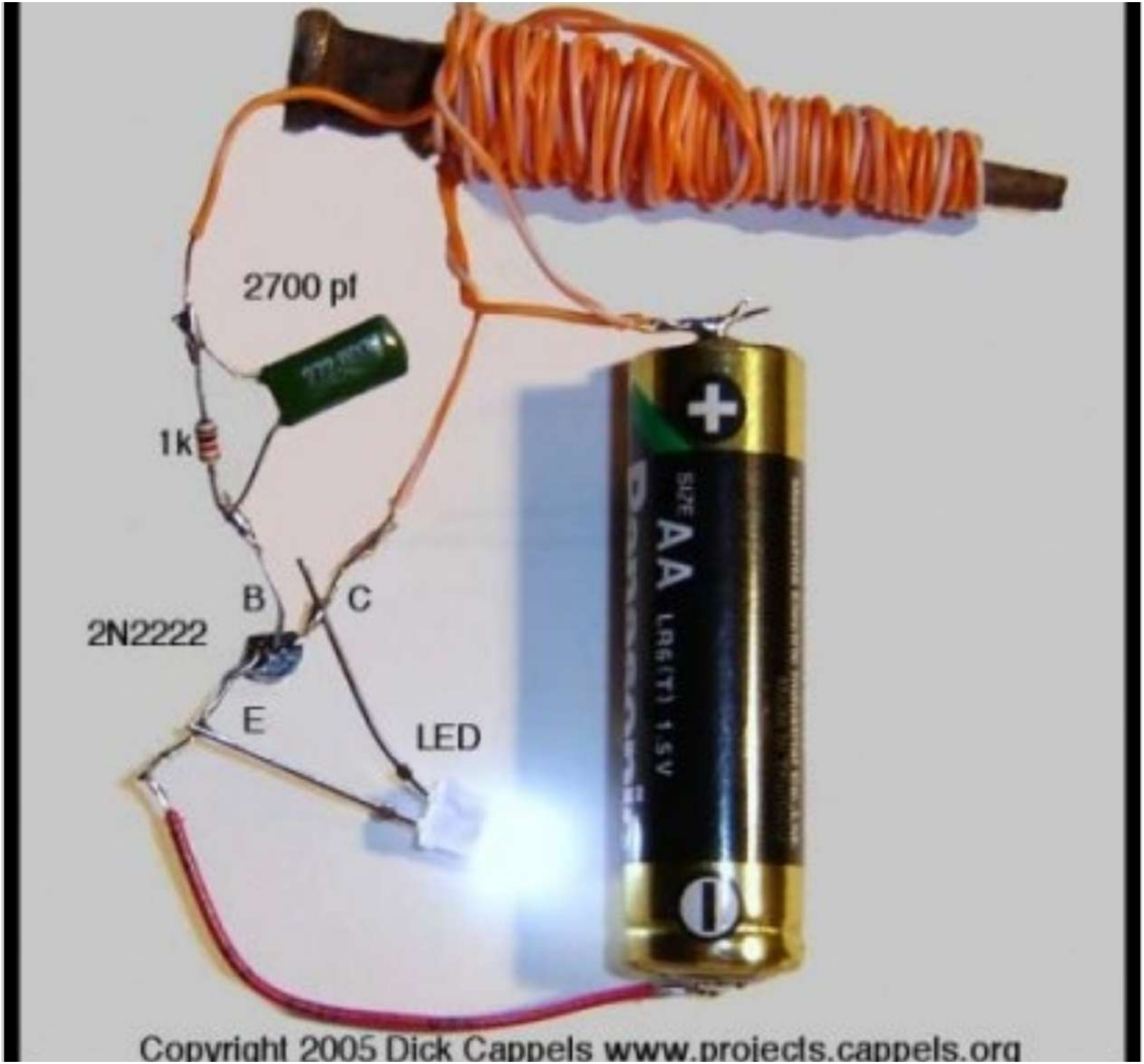
Solder the other leg of the LED (the cathode) to the emitter lead of the transistor.
Do NOT cut off the LED leg.
(Don't wory if you have cut it off - you'll just need to solder another wire to this leg so that you can connect it to the battery.)

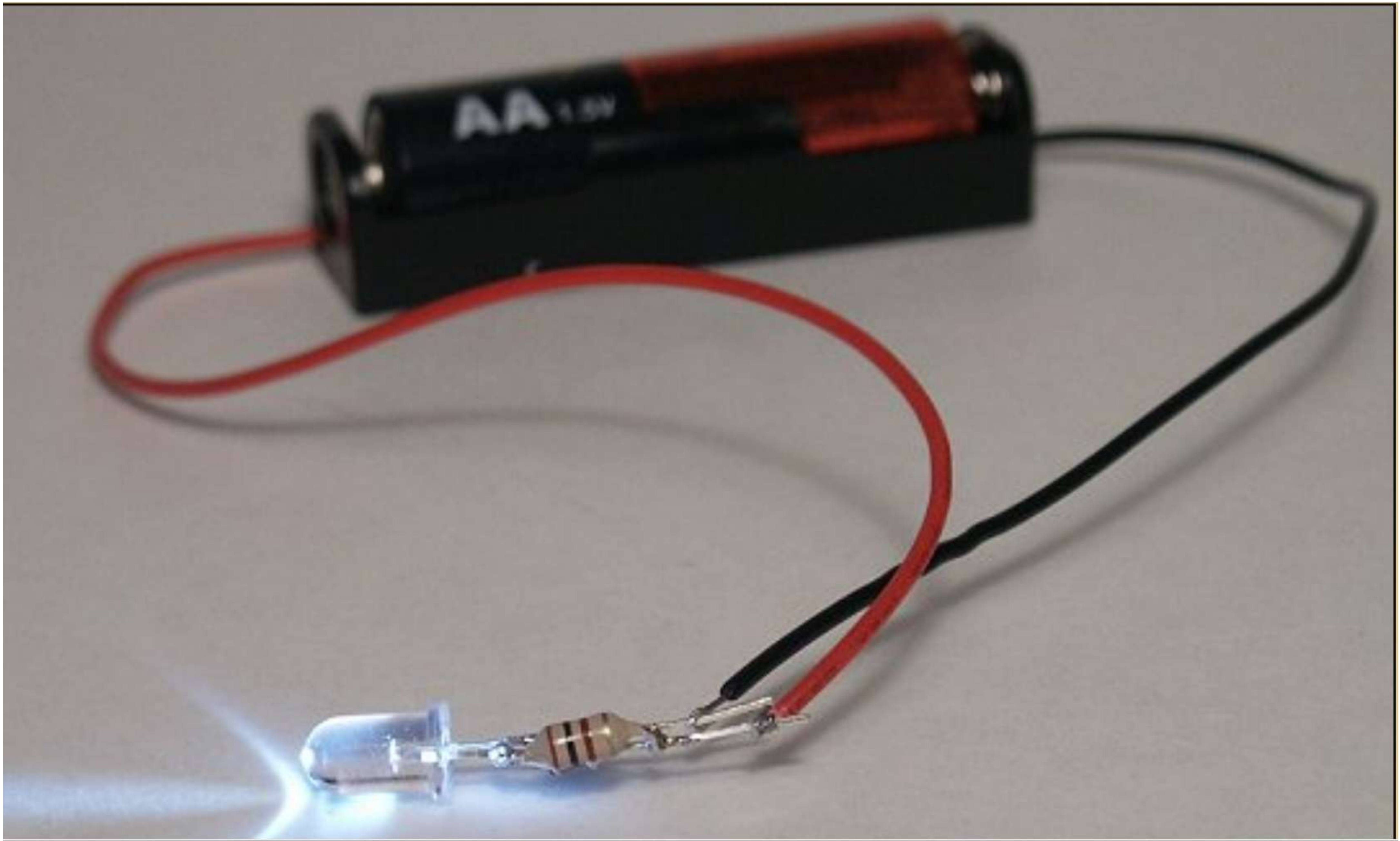
That's the circuit finished. Now use it.

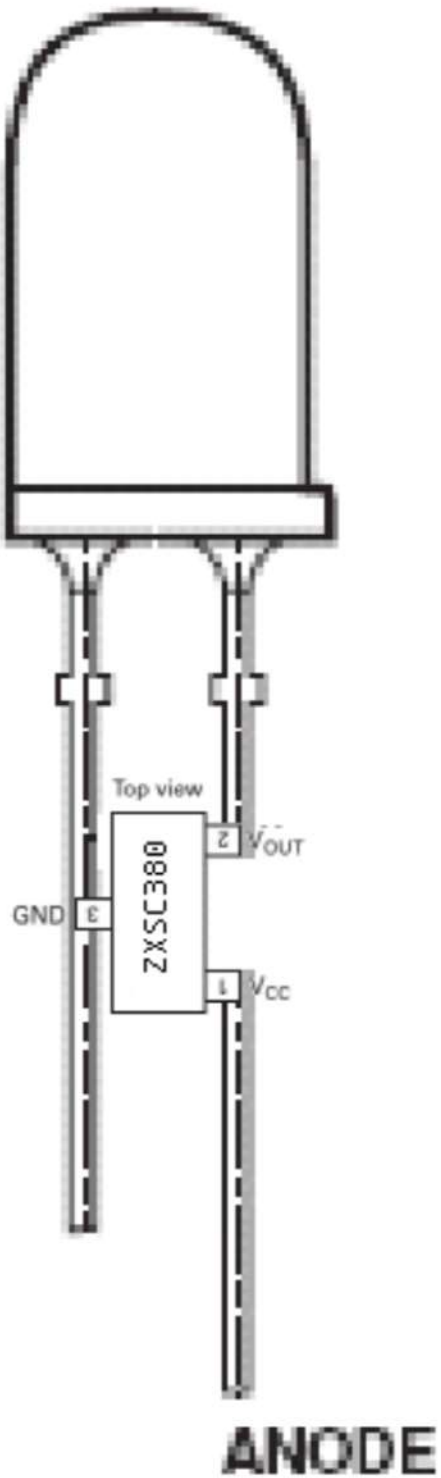
First you need a 'dead' battery - that means one where the voltage is less than 1.3V.
You can see that the battery used here has a Voltage of just over 1V.

Connect the two soldered wires coming from the inductor to the positive (+) side of the battery.
Connect the uncut LED leg (the athode) to the negative (-) side of the battery.




2700 pf
1k
B
C
2N2222
E
LED
SIZE AA
LR6(T) 1.5V
Copyright 2005 Dick Cappels www.projects.cappels.org

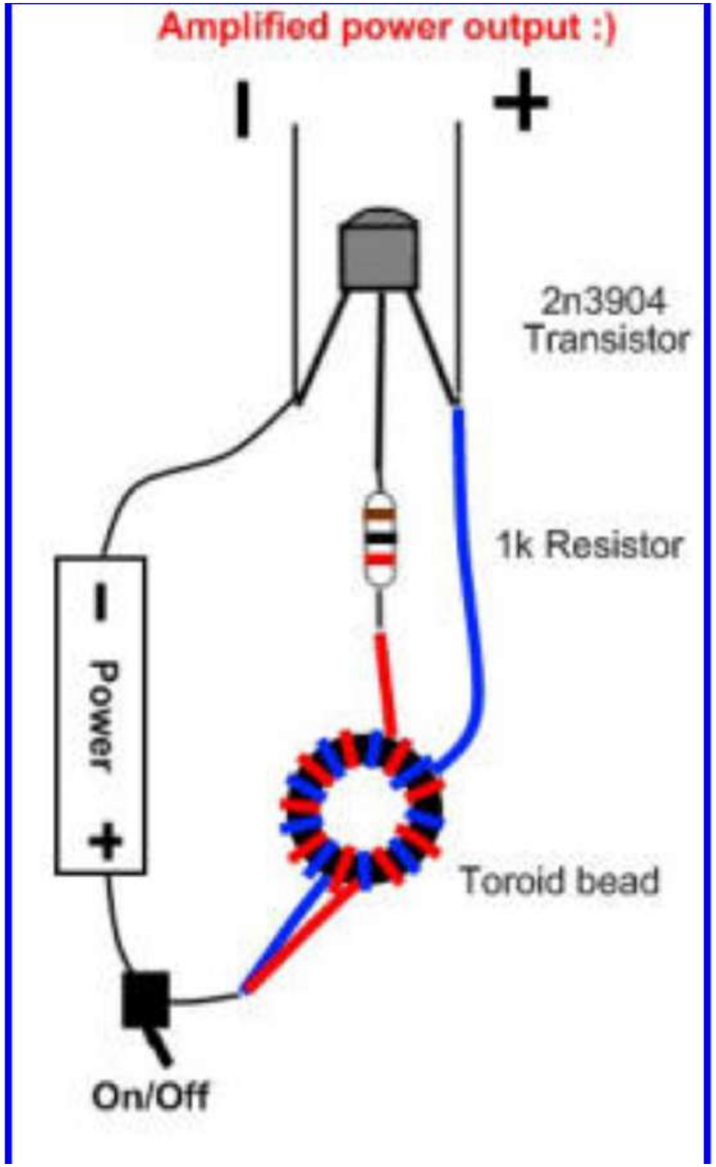

AA 1.5V

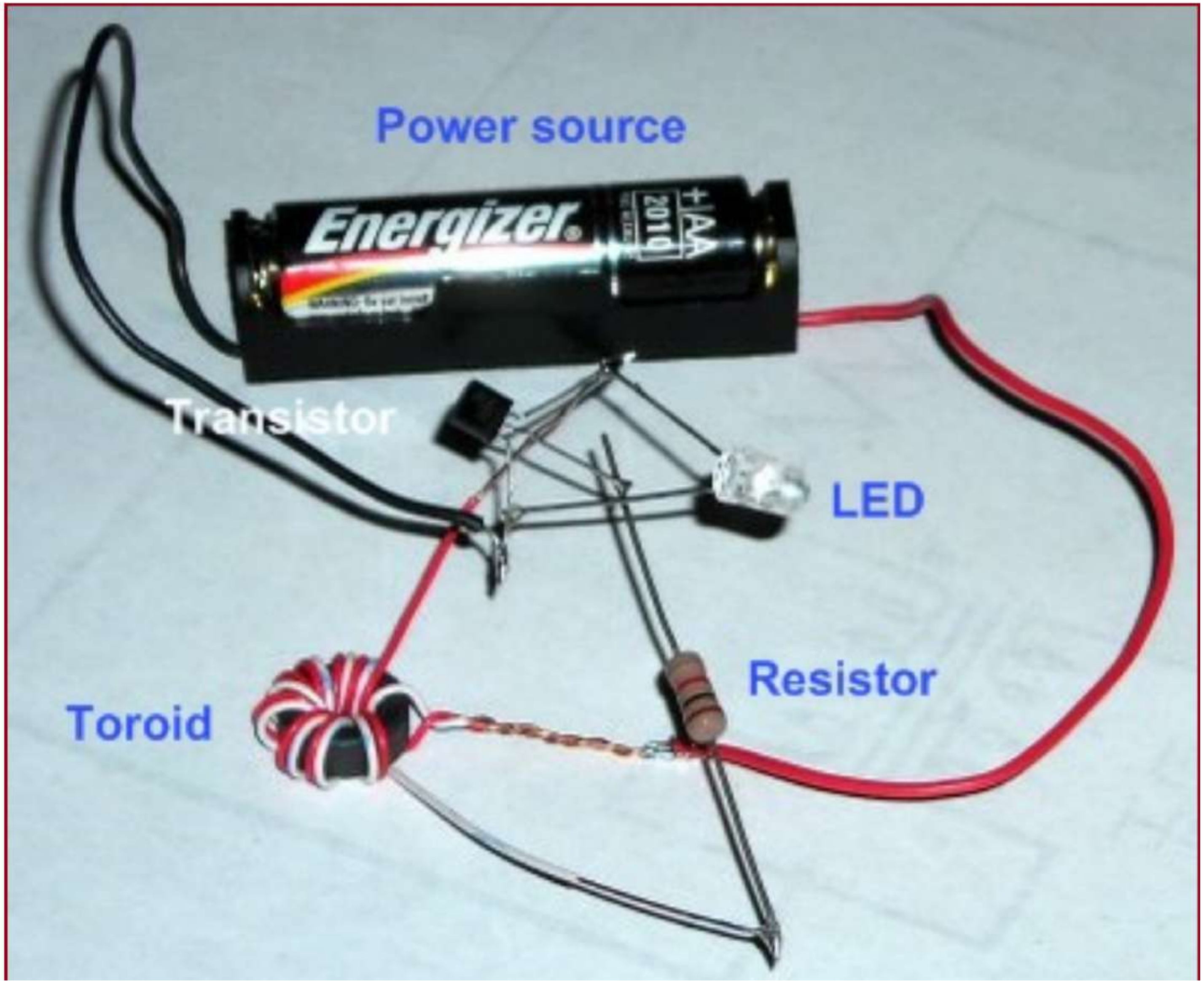


The chip is soldered onto the legs of the LED and then the wire between pins 1 and 2 is cut out so there is no connection. The inductor is then soldered so as to bridge pins 1 and 2. I soldered the inductor on before cutting out the wire but it might be easier to try some other method.

As I said previously, this is a tedious solder job, and the SOT23 IC is easily damaged (ask me how I know!) It takes patience and a steady hand to assemble these few parts.

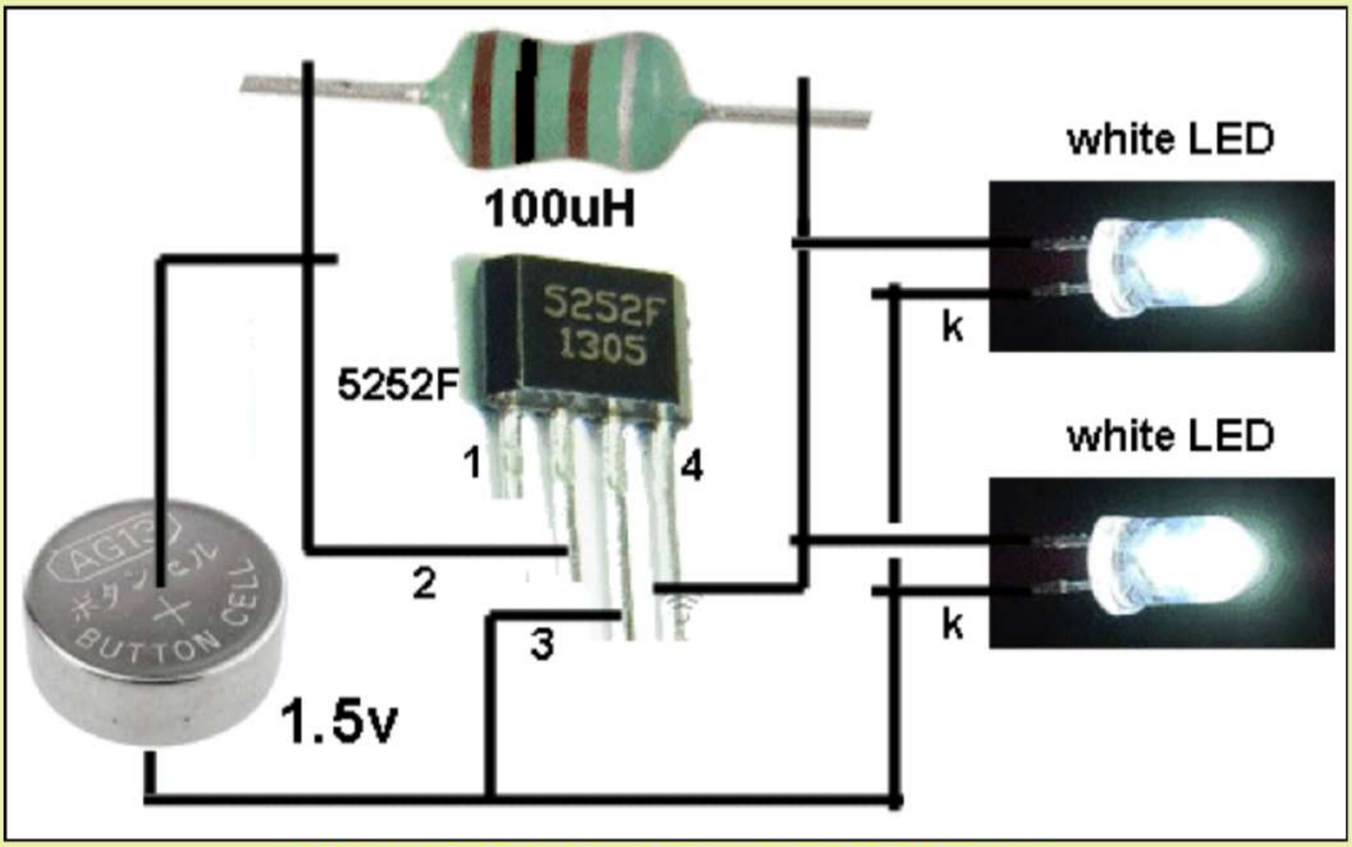
This circuit would work for the LED indicator in the 1.5v boosters and would most likely be a better choice than the Joule Thief that I posted previously.


Amplified power output :)
-
+
2n3904
Transistor
1k Resistor
- Power +
Toroid bead
On/Off


Power source
Energizer
AA
Transistor
LED
Resistor
Toroid

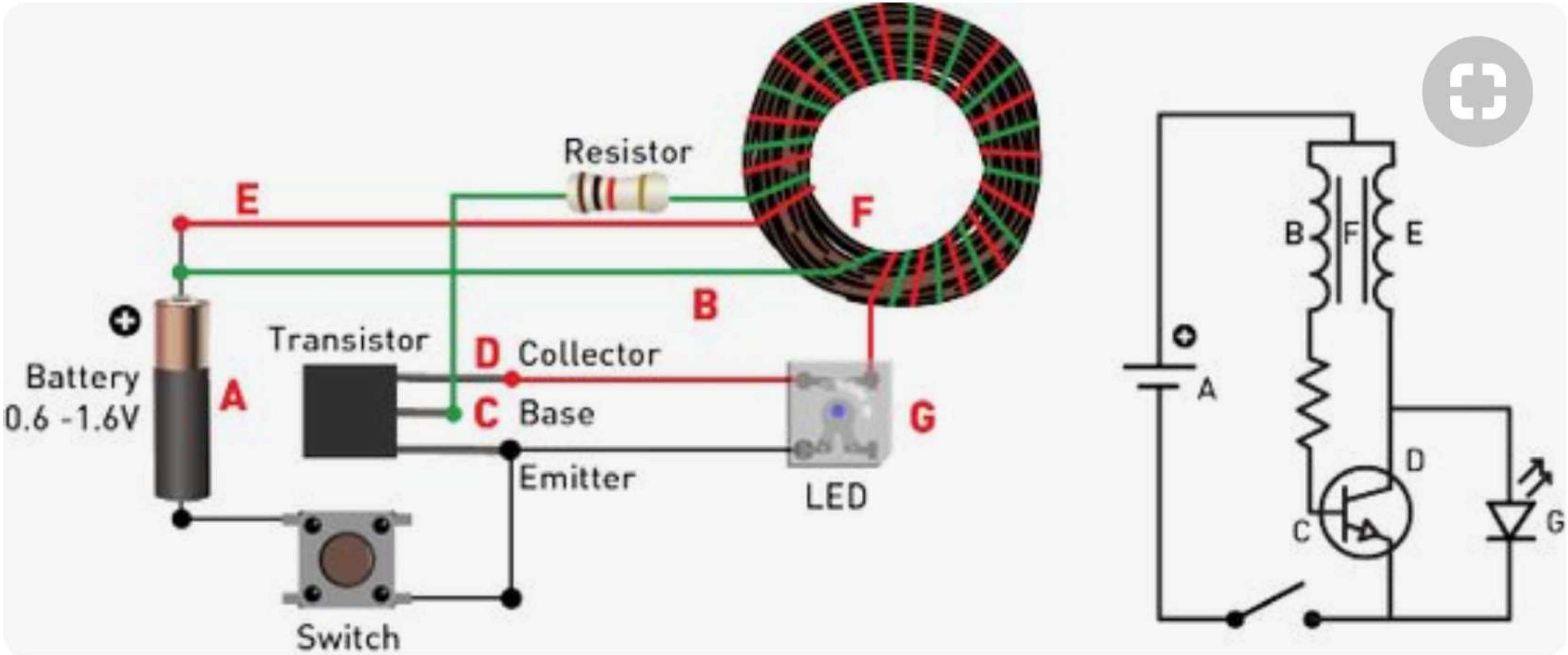
The CIRCUIT

The circuit is very simple. All the work is done by the 5252F chip.
It contains an oscillator, a high speed diode and a power transistor. All these components inside the "IC" that looks like a 4-leaded transistor!
This IC is smaller and cheaper than all the parts individually and is less expensive than the competition (that costs 70 cents).
We can produce a complete project for a few dollars and it has two "test features."
You can place a LED across one of the LEDs on the board and find out the colour as many LEDs come in a "clear-as-glass" package and you cannot tell the colour until they are illuminated.
The other feature is INDUCTOR TESTING.
The current taken by the circuit changes according to the value of the inductor.
You just need a few reference values and you can work out the value of an inductor within the range of the inductors you have used as samples, or slightly higher or lower values.

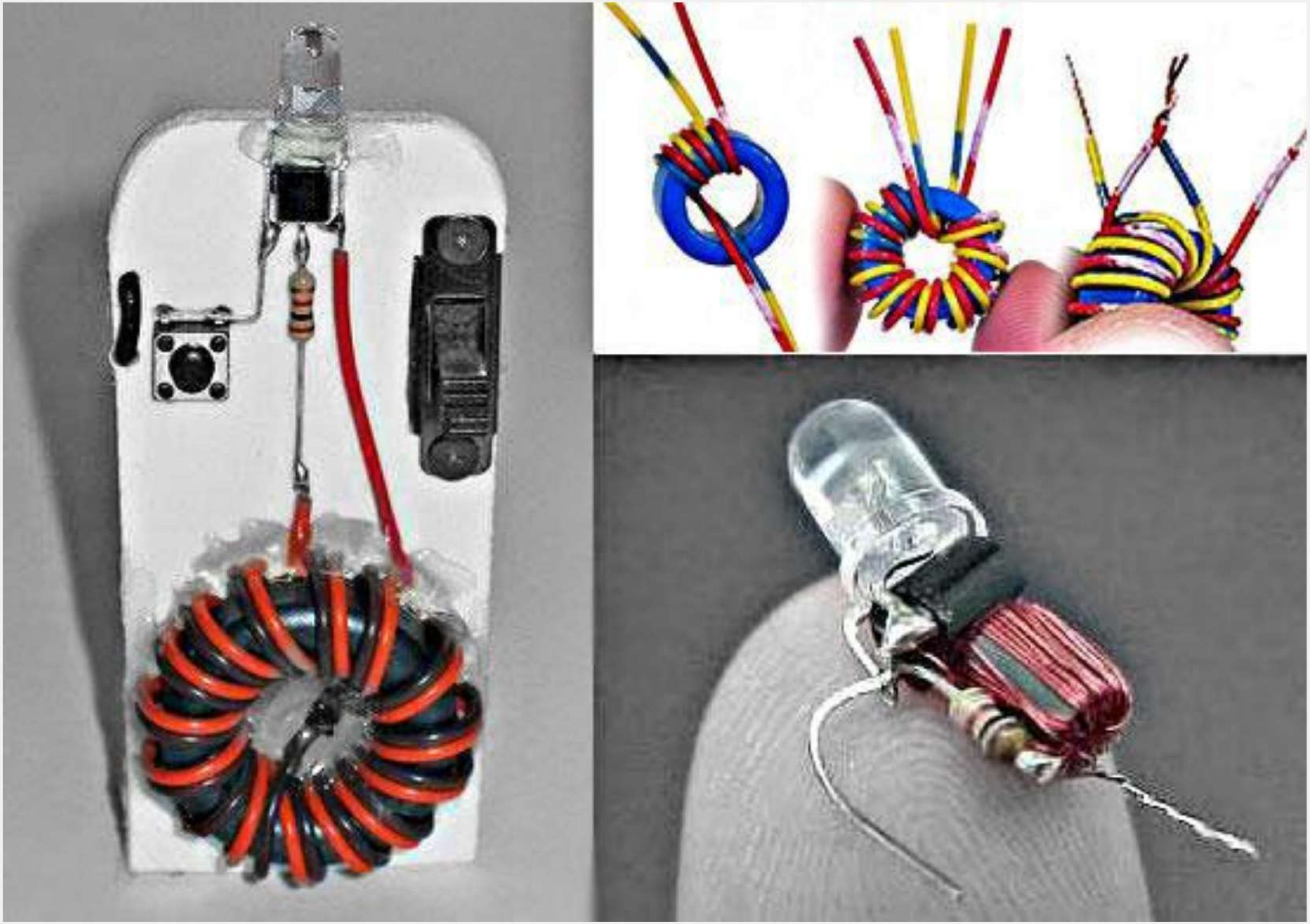


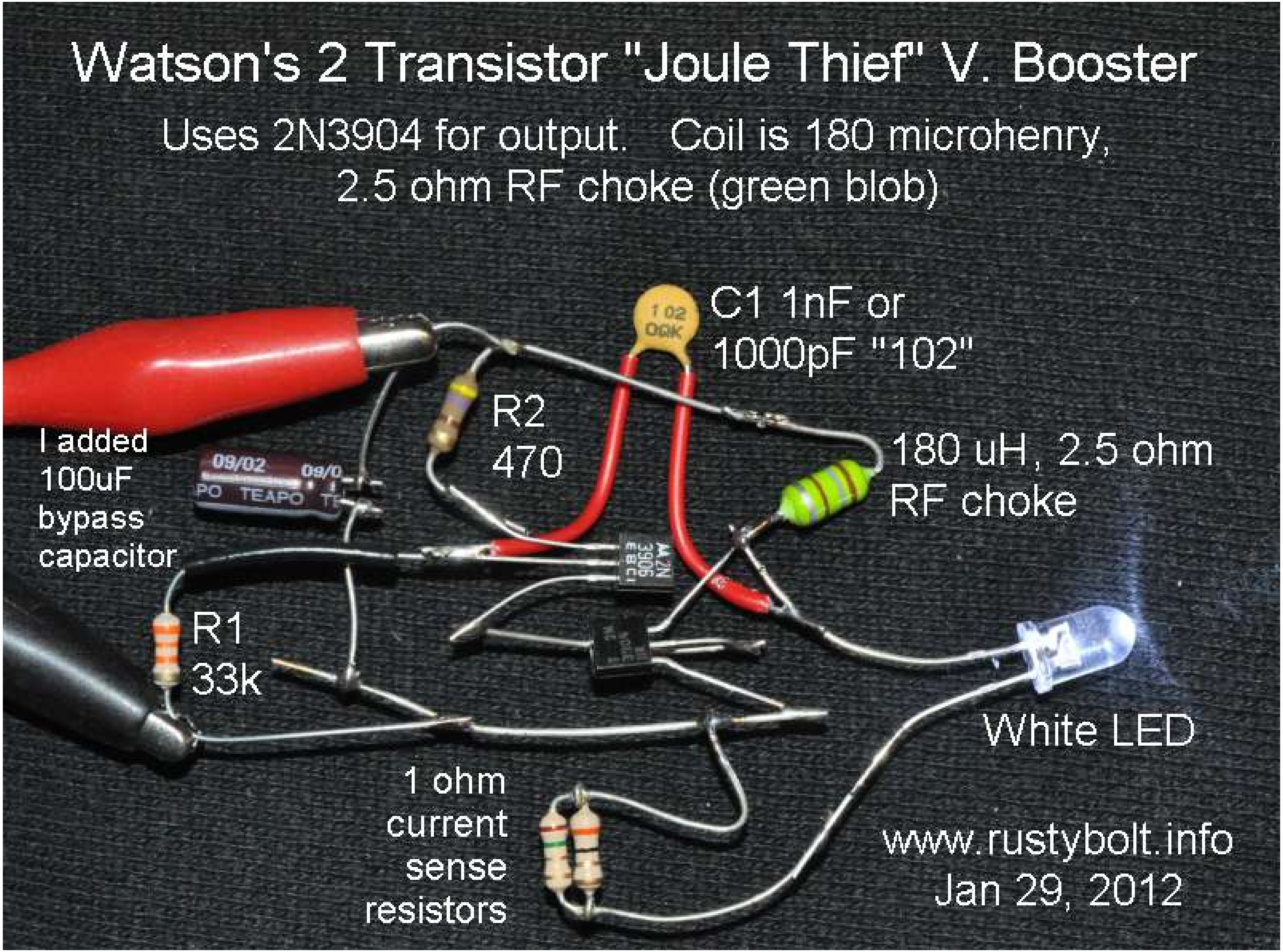
The layout using component pictures.

Using a 220uH, the circuit takes 13mA and illuminates 2 white LEDs very brightly.
Using 100uH the circuit takes 30mA and the LEDs are really the same brightness.
Using 33uH the circuit takes 80mA and the LEDs are just about the same brightness.
Obviously the 220uH creates the most efficient circuit.
The QX5252F is capable of delivering more than 100mA to the LEDs but we only need

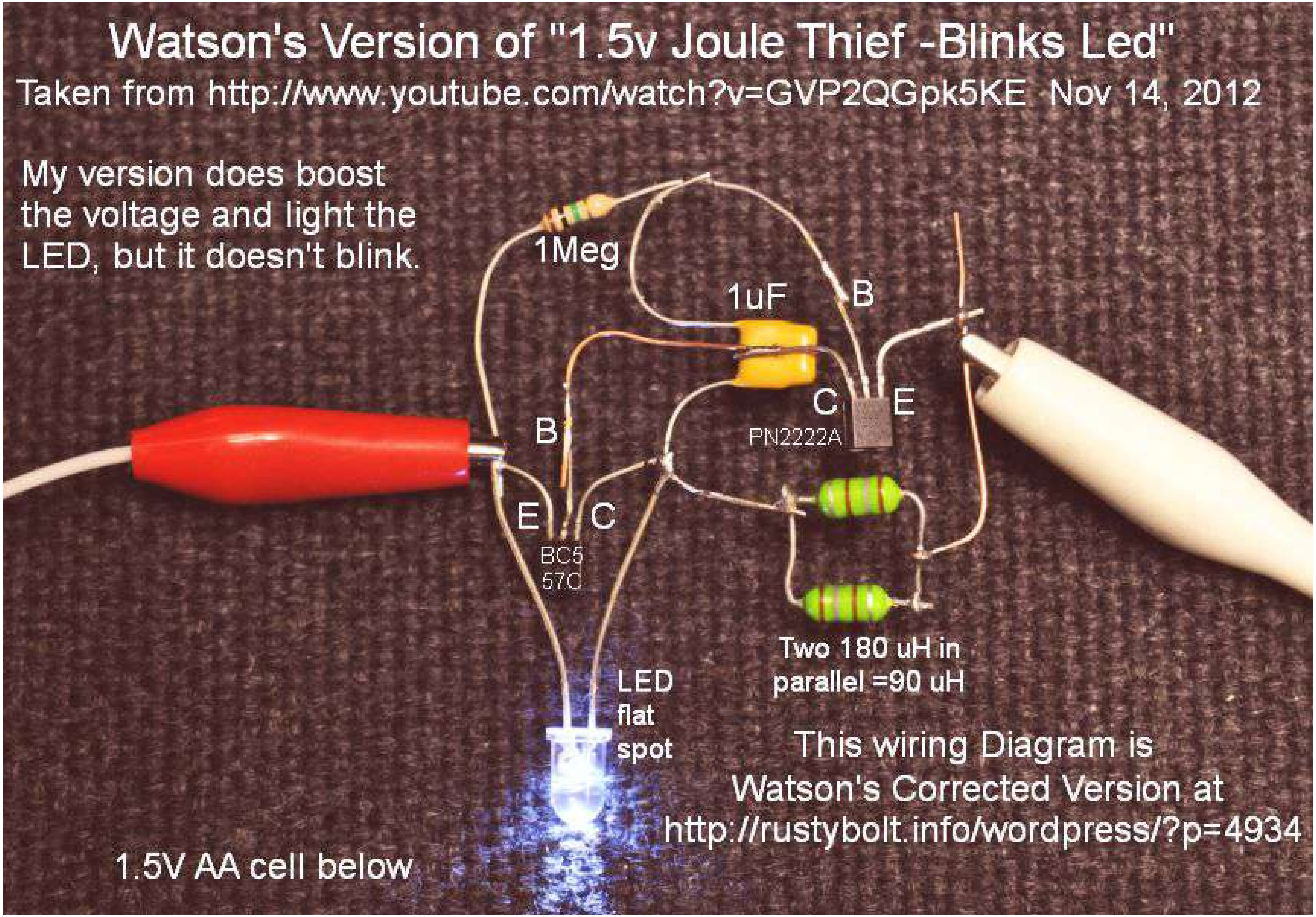


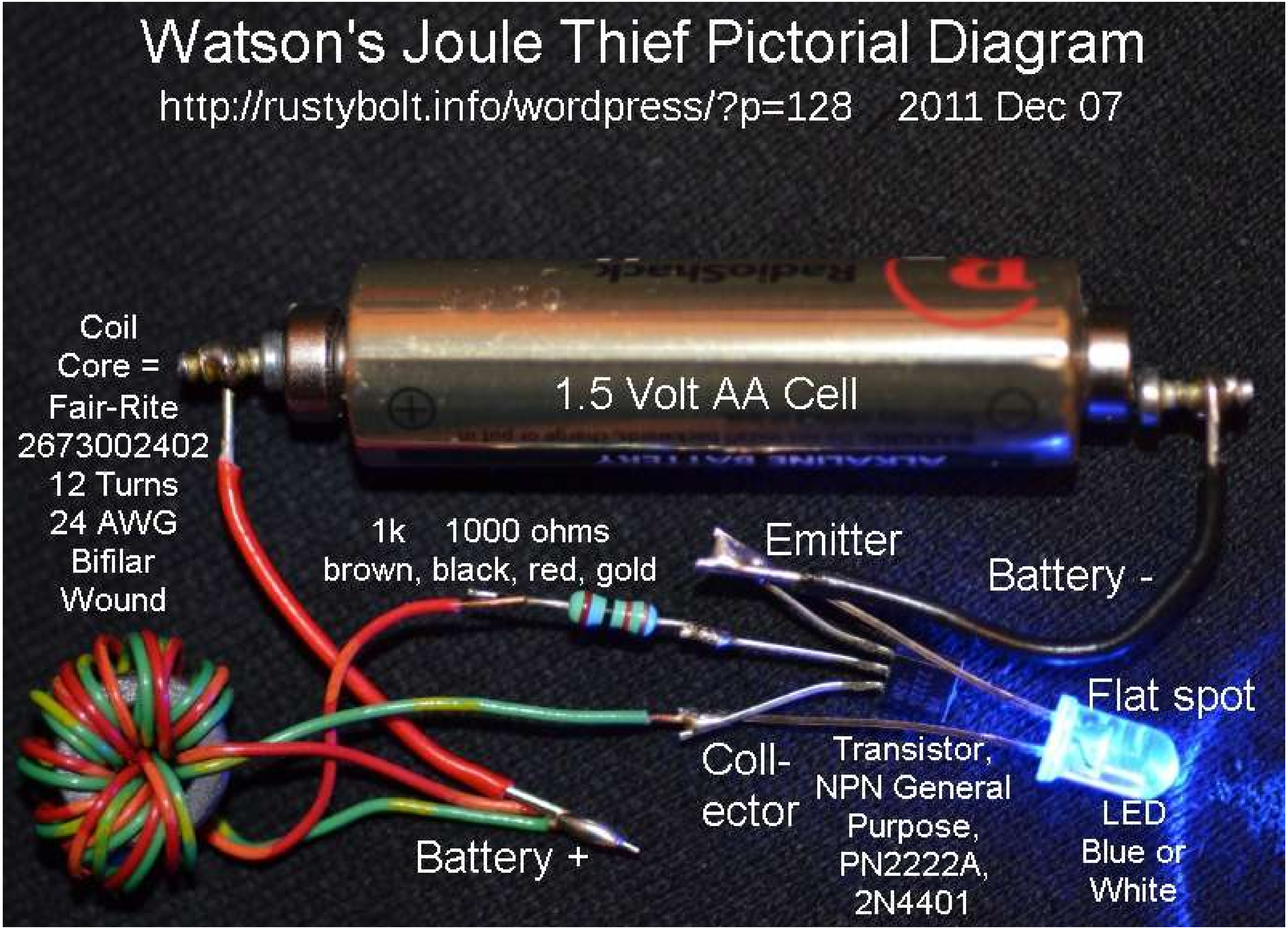
Resistor
E
F
B
Transistor
D Collector
C Base
Emitter
Battery
0.6 -1.6V
A
G
LED
Switch
B
F
E
A
D
C
G



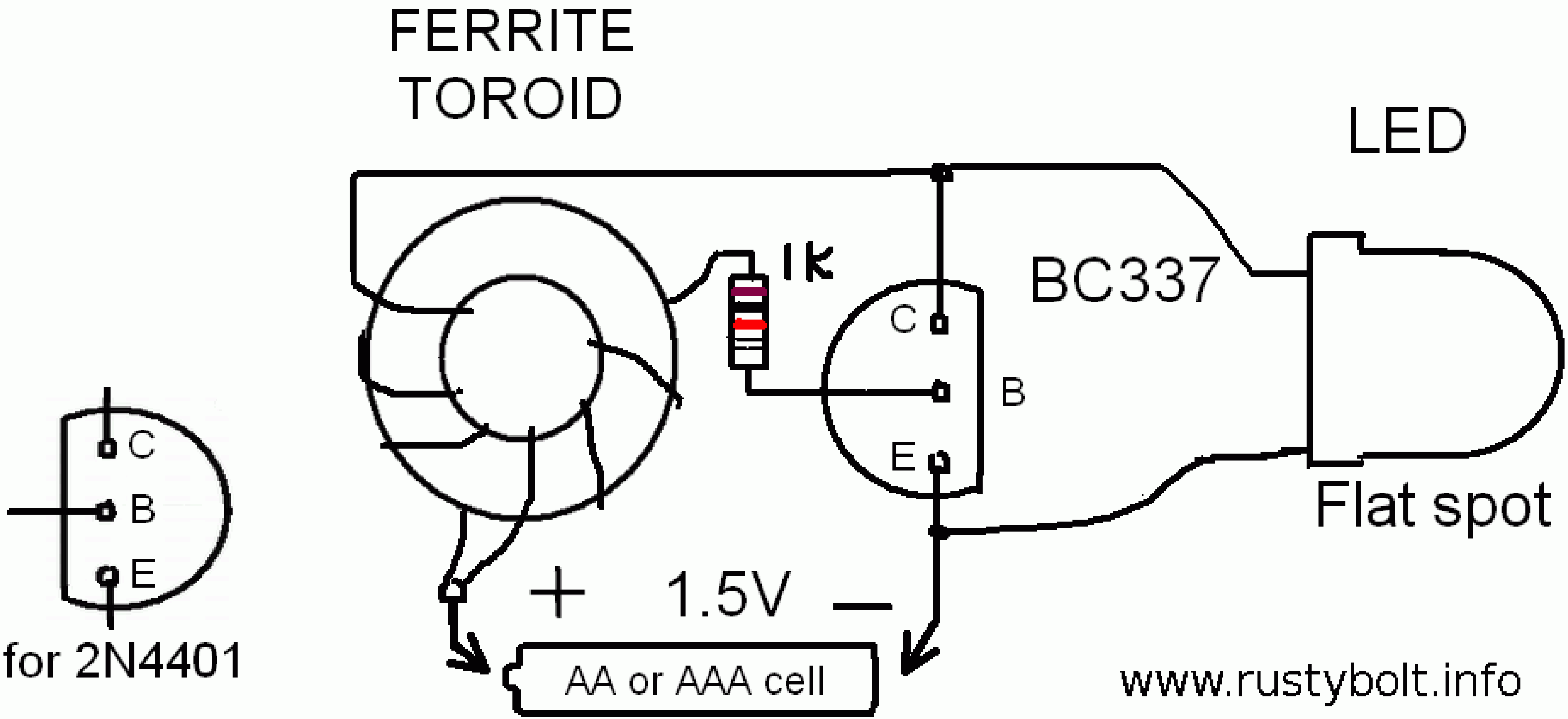


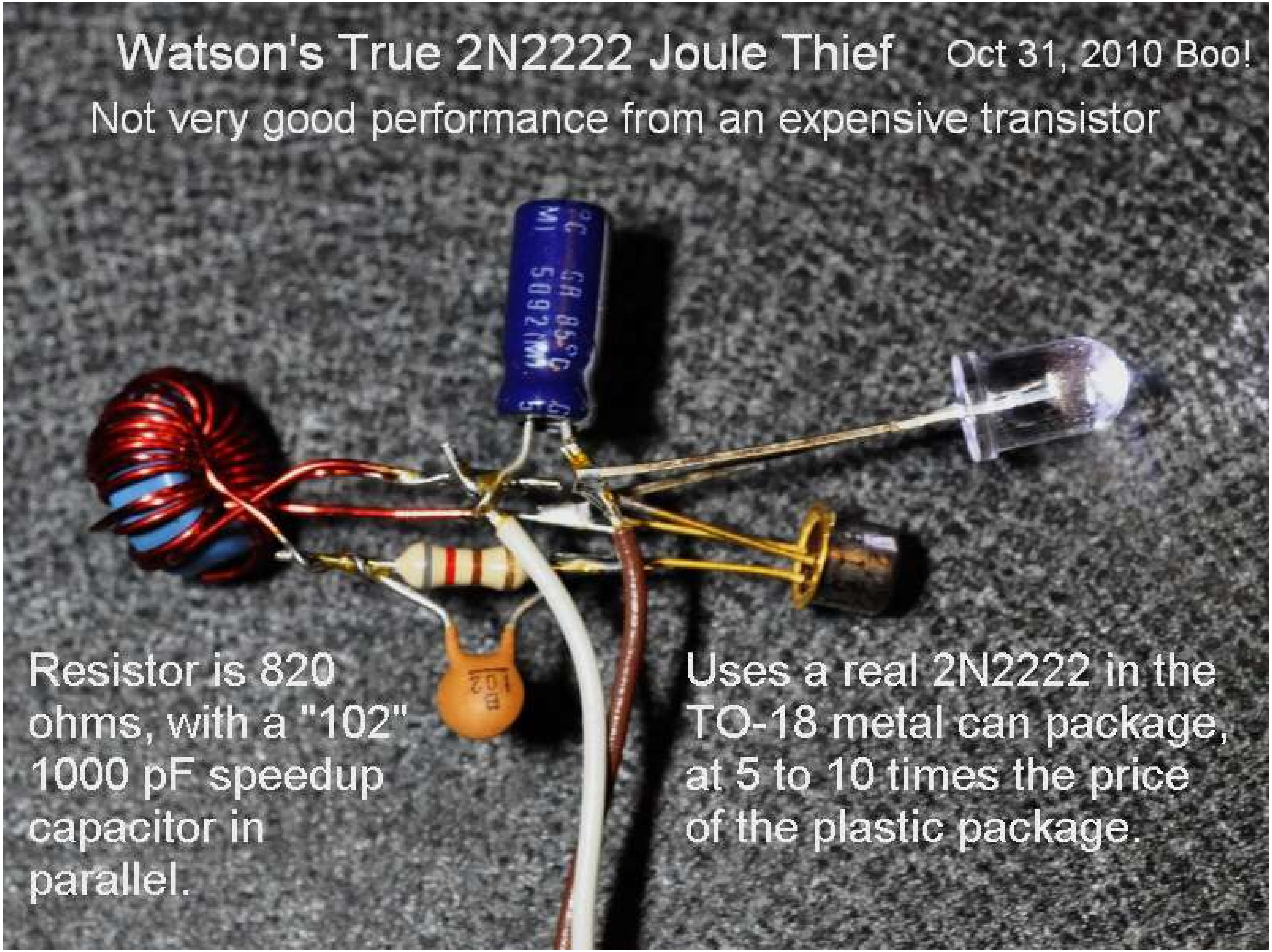
Watson's 2 Transistor "Joule Thief" V. Booster
Uses 2N3904 for output. Coil is 180 microhenry,
2.5 ohm RF choke (green blob)
C1 1nF or
1000pF "102"
R2
470
I added
100uF
bypass
capacitor
180 uH, 2.5 ohm
RF choke
R1
33k
White LED
1 ohm
current
sense
resistors
www.rustybolt.info
Jan 29, 2012

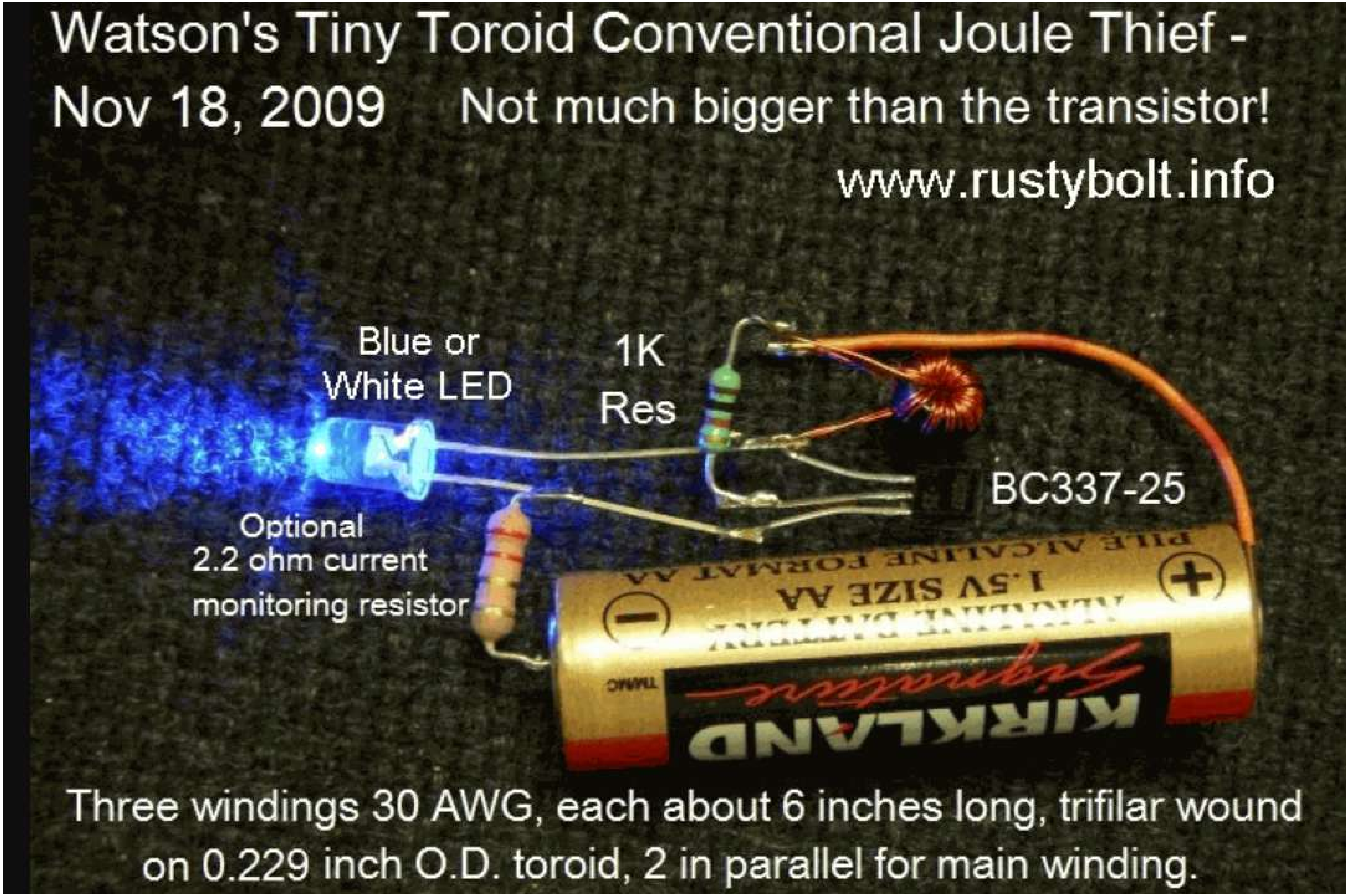

Watson's Version of "1.5v Joule Thief -Blinks Led"
Taken from http://www.youtube.com/watch?v=GVP2QGpk5KE Nov 14, 2012
My version does boost the voltage and light the LED, but it doesn't blink.
1Meg
1uF
B
C
E
PN2222A
B
E
C
BC5
57C
LED
flat
spot
Two 180 uH in parallel =90 uH
This wiring Diagram is
Watson's Corrected Version at
http://rustybolt.info/wordpress/?p=4934
1.5V AA cell below


Watson's Joule Thief Pictorial Diagram
http://rustybolt.info/wordpress/?p=128 2011 Dec 07
Coil Core = Fair-Rite 2673002402 12 Turns 24 AWG Bifilar Wound
1.5 Volt AA Cell
1k 1000 ohms brown, black, red, gold
Emitter
Battery -
Flat spot
Coll-ector
Transistor, NPN General Purpose, PN2222A, 2N4401
LED Blue or White
Battery +

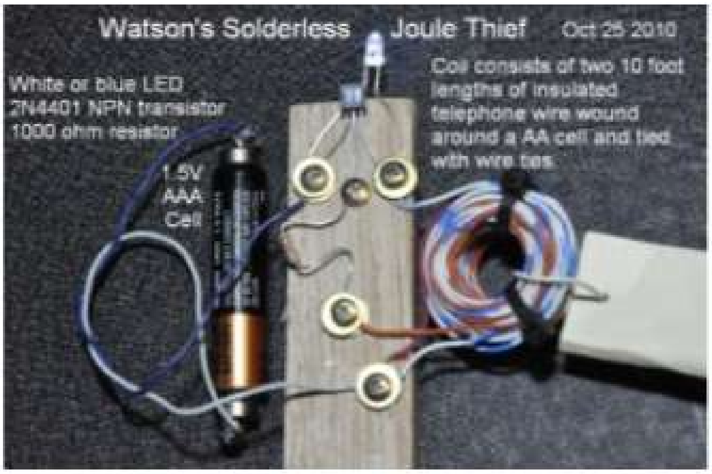
Joule Thief   Pictorial Wiring Diagram   Dec 11, 2009




Watson's True 2N2222 Joule Thief
Oct 31, 2010 Boo!
Not very good performance from an expensive transistor
Resistor is 820 ohms, with a "102" 1000 pF speedup capacitor in parallel.
Uses a real 2N2222 in the TO-18 metal can package, at 5 to 10 times the price of the plastic package.


Watson's Tiny Toroid Conventional Joule Thief -
Nov 18, 2009 Not much bigger than the transistor!
www.rustybolt.info
Blue or
White LED
1K
Res
BC337-25
Optional
2.2 ohm current
monitoring resistor
Three windings 30 AWG, each about 6 inches long, trifilar wound
on 0.229 inch O.D. toroid, 2 in parallel for main winding.

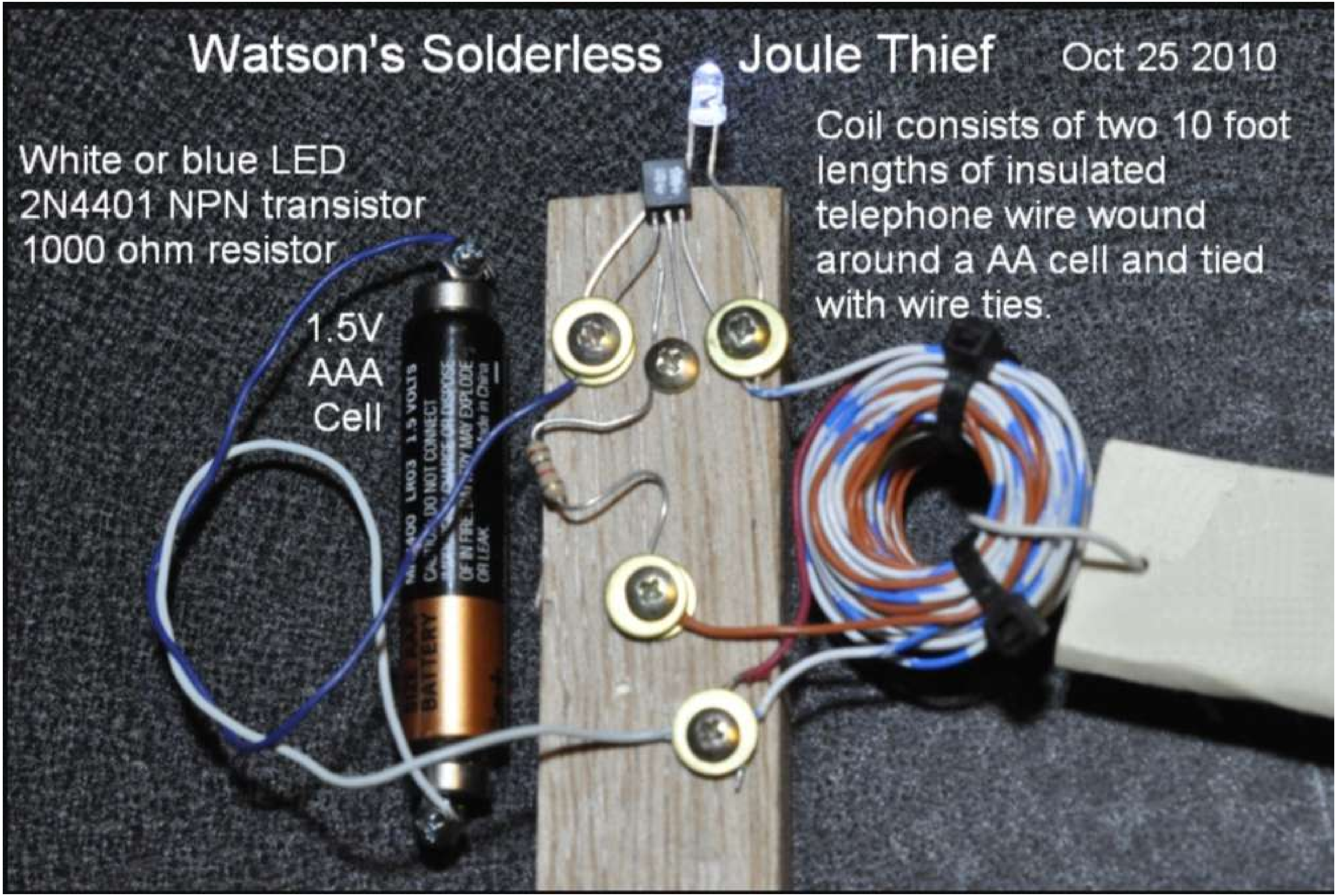
I took this photo just before Halloween back in 2010, after I made this Joule Thief without solder and without a toroid. It shows that you don't have to know how to solder and you don't have to have a toroid to make a working Joule Thief – all you need is a screwdriver. So do your thing and experiment a bit, and see what you can come up with.



Each screw (except for one) has two washers to hold the wires. Putting two or more wires under the screw head without the washers will be difficult and the wires will try to come loose. Two or three washers makes it easier and the wires are held much firmer. The wood block is a piece of solid oak that is about a half inch (12mm) thick. The oak is very hard and the screw holes have to be drilled out before the screws are put in. This also makes it possible to use small screws with a flat end which were used for holding plastic parts together. The screw size is about #3 by 3/8 inch long, with coarse threads like a sheet metal screw.

The LED is not very bright because it's a cheap 3 mm white LED I got from an eBay seller, and it has been used a bit so it has dimmed. Use a decent LED and this circuit will be as bright as a toroid JT.

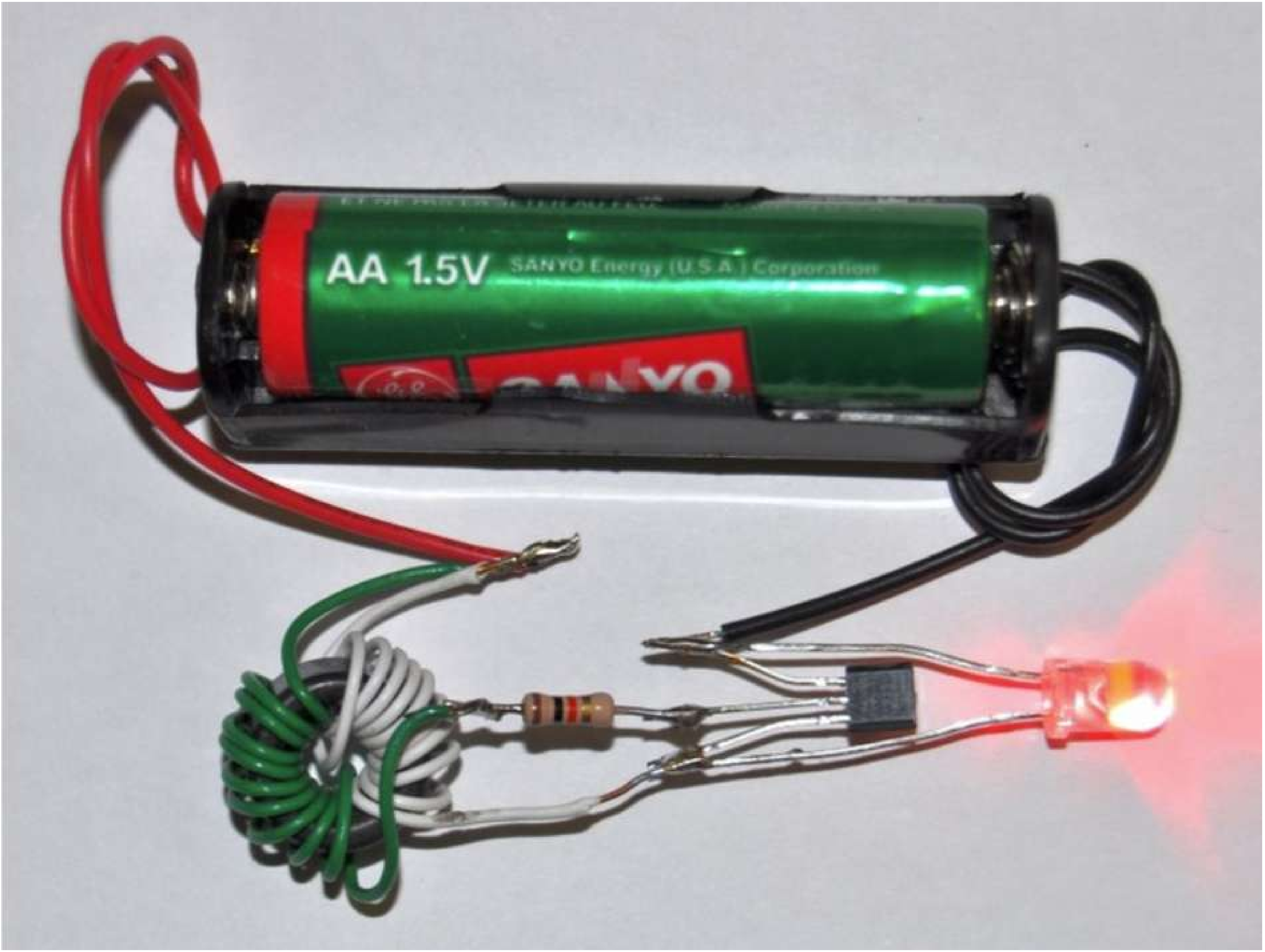
Another Joule Thief I put together is shown in the second photo. This uses the bare wires to wrap around the joints in place of solder. The joints are not as mechanically strong as solder but for a quick experiment they should work okay. If the JT is going to be used, the wire joints may become intermittent or loose. The solder joints are a much better connection.

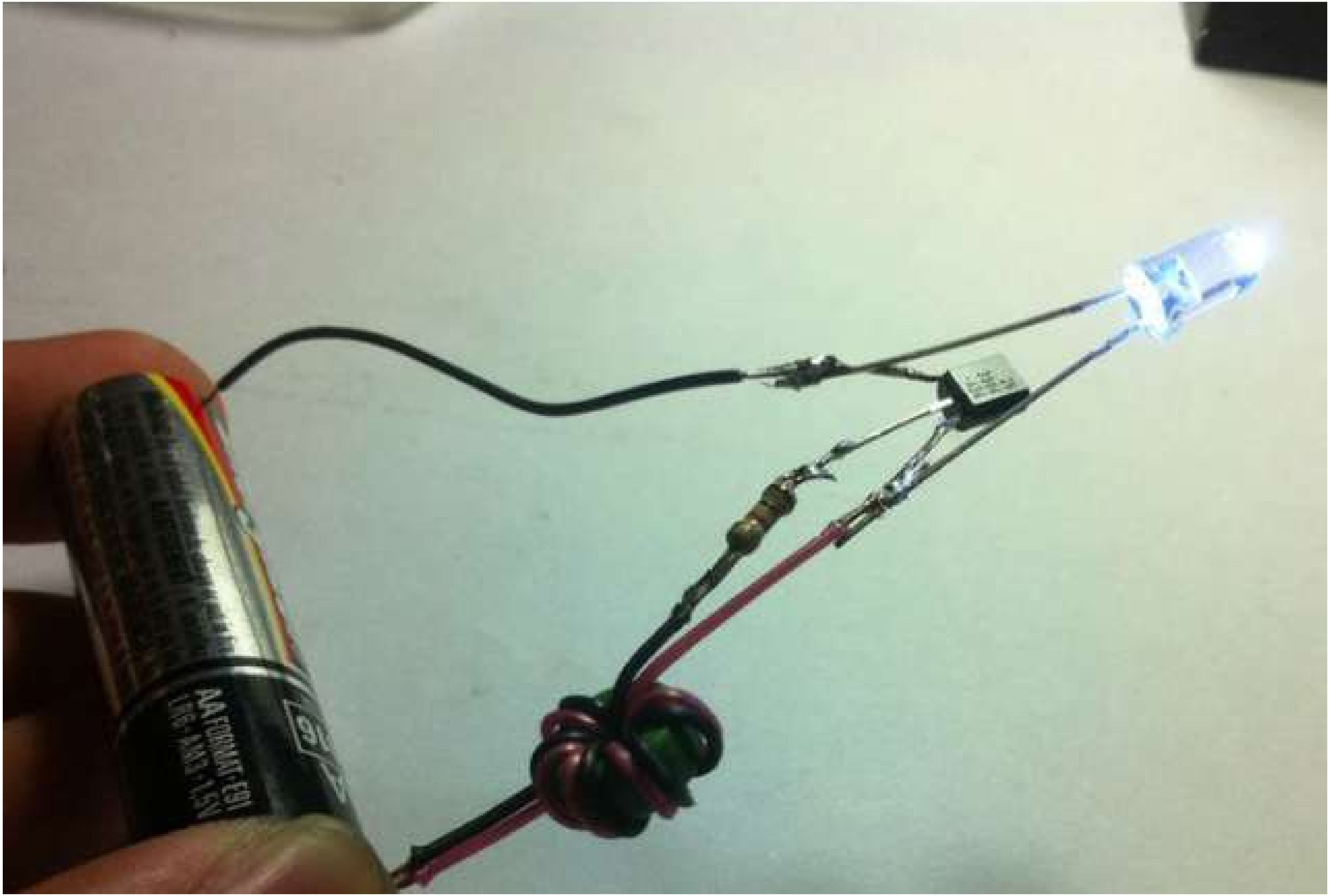

Watson's Solderless Joule Thief Oct 25 2010
White or blue LED
2N4401 NPN transistor
1000 ohm resistor
1.5V
AAA
Cell
Coil consists of two 10 foot lengths of insulated telephone wire wound around a AA cell and tied with wire ties.

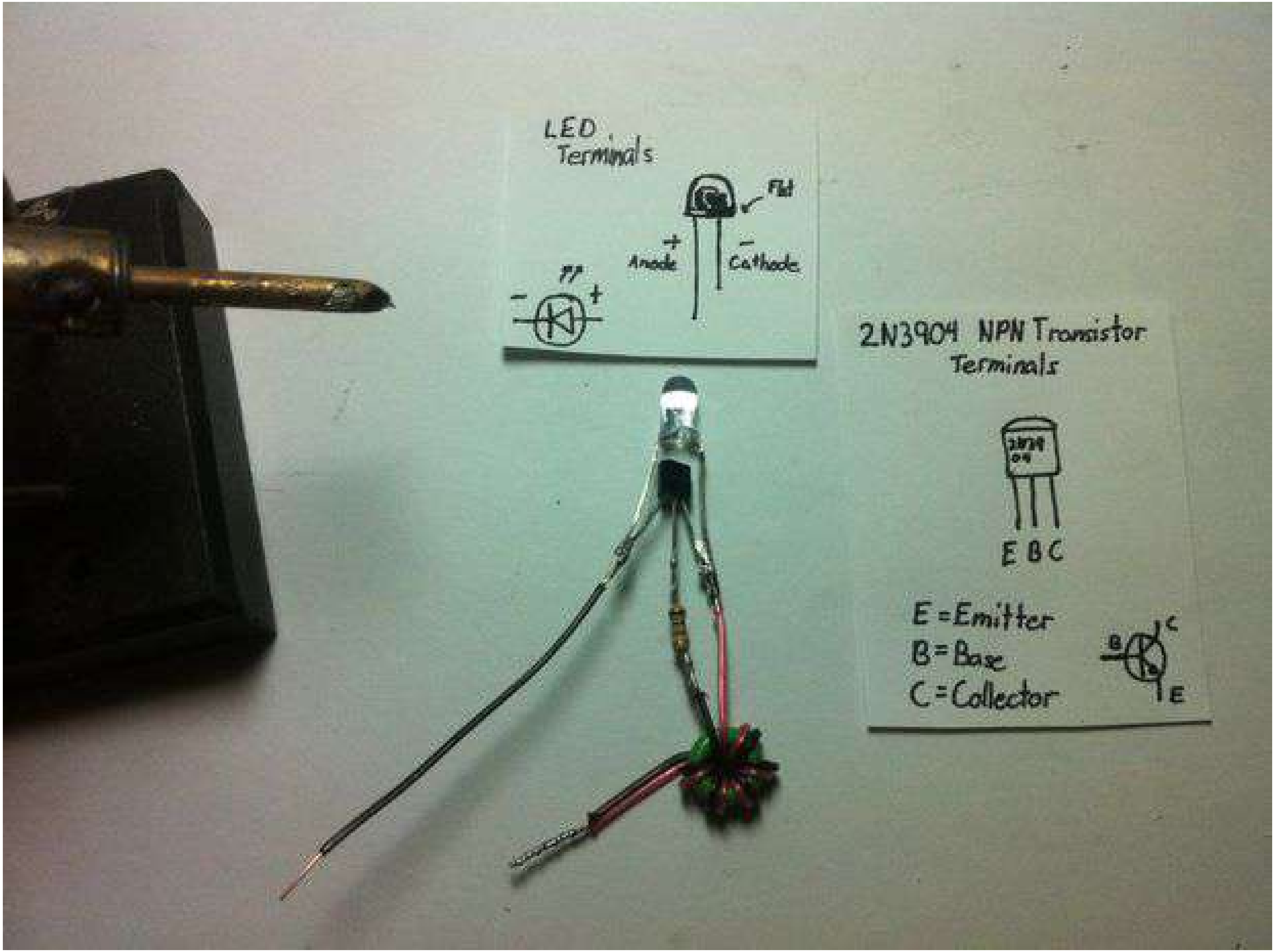

Watson's 'Toroid Free' Air Core Joule Thief
2.2k Red,
Red, Red,
Gold
rustybolt.info/wordpress/?p=2872 May 21, 2012

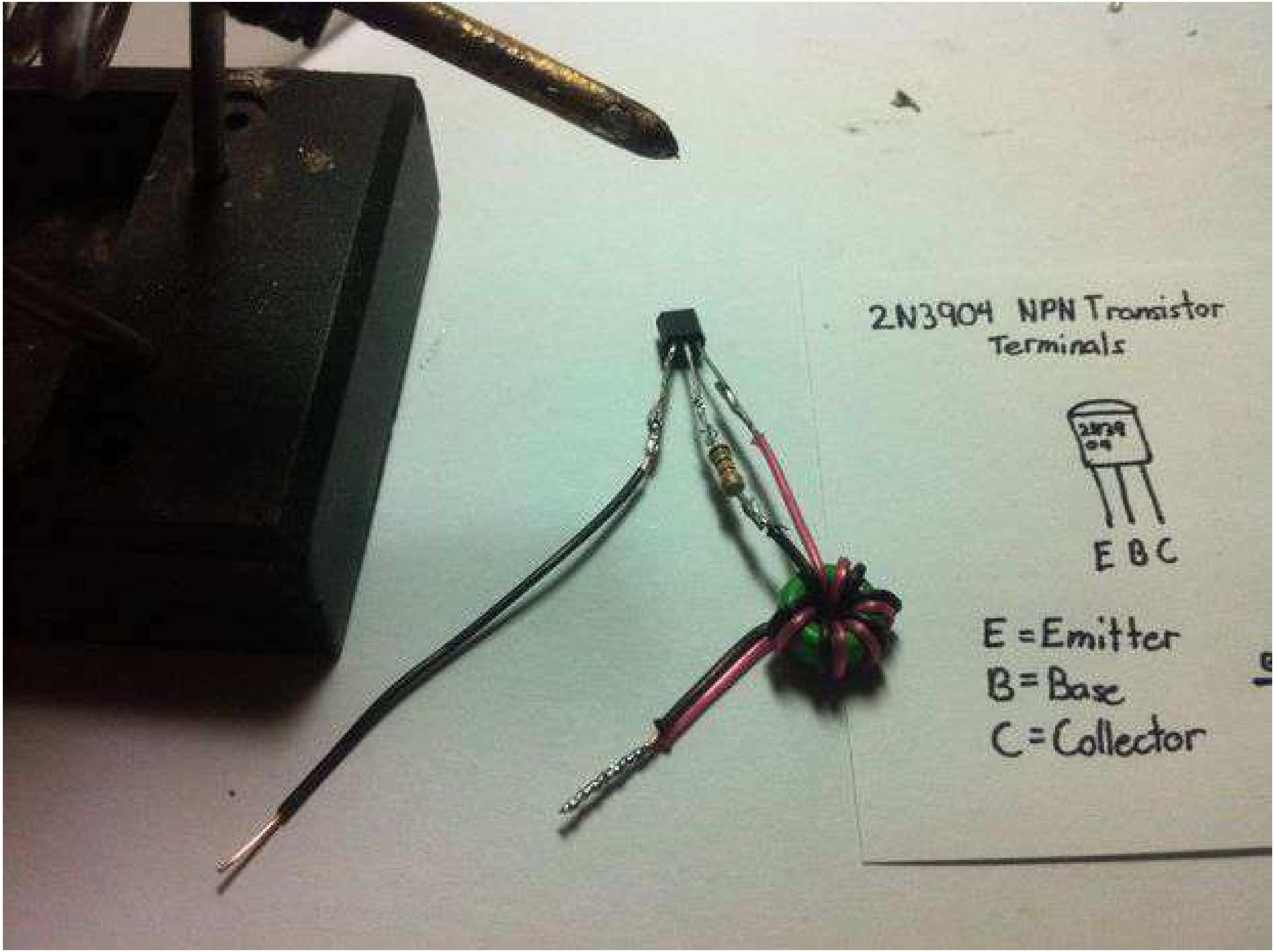

Watson's Nearly Disposable Joule Thief Light
rustybolt.info/wordpress/?p=2133 Fri. Apr 13 2012
Completed circuit ready for coating of silicone sealant.
Transistor is a BC337. If it was a PN2222A or 2N4401,
the flat side would be facing up.

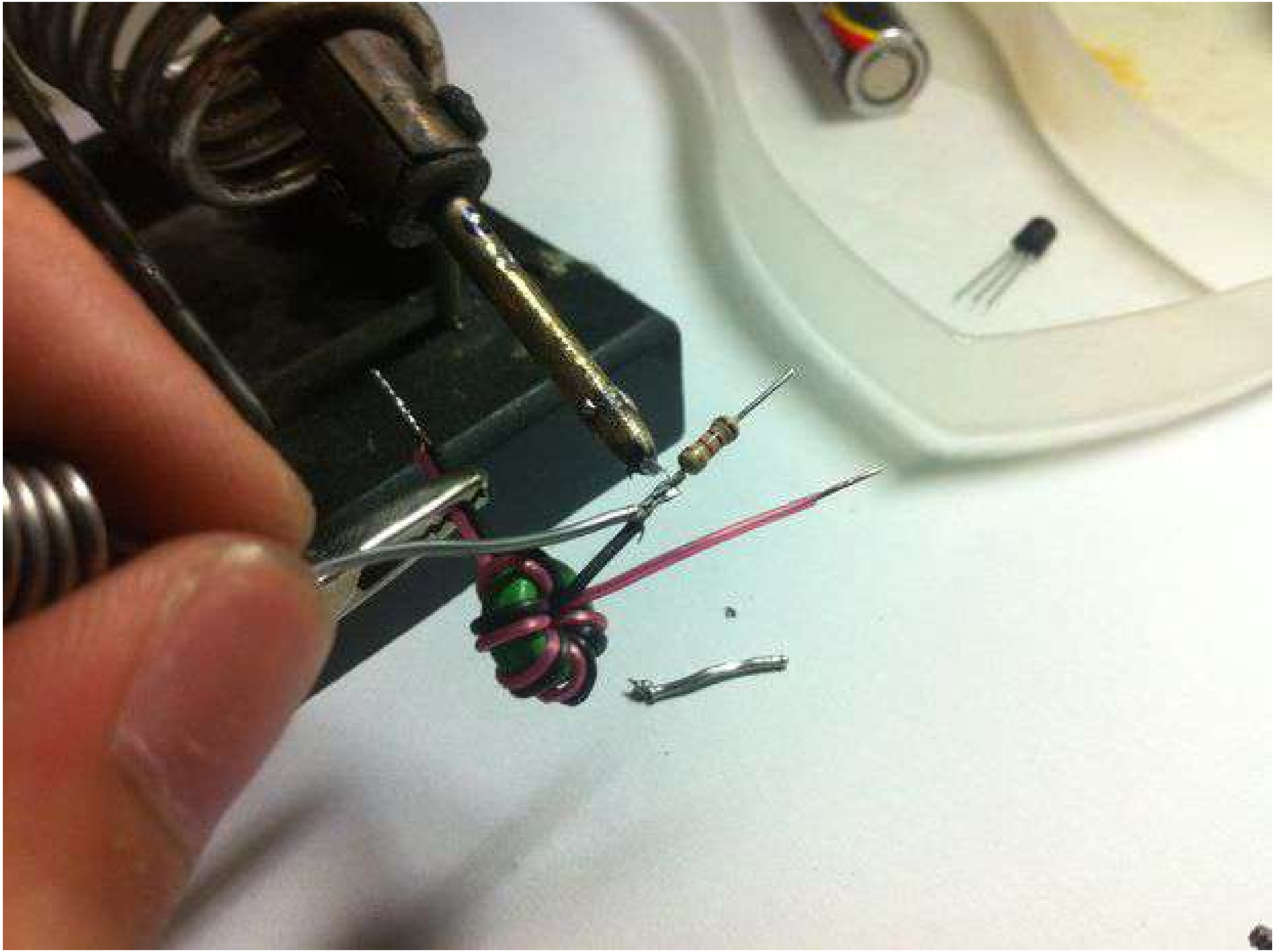

Watson's Solderless Joule Thief
http://rustybolt.info/wordpress/?p=5210

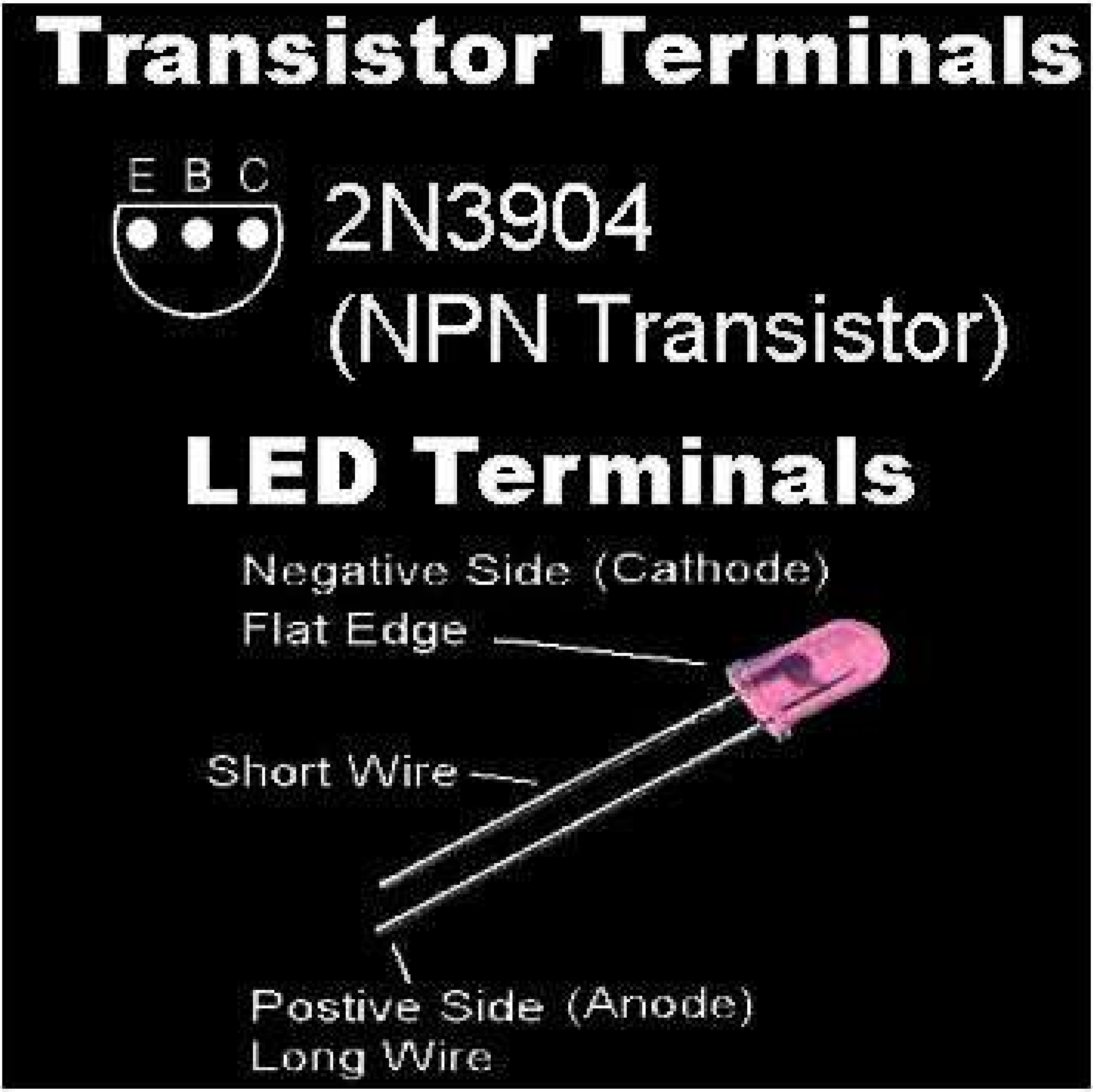

AA 1.5V
SANYO Energy (U.S.A.) Corporation

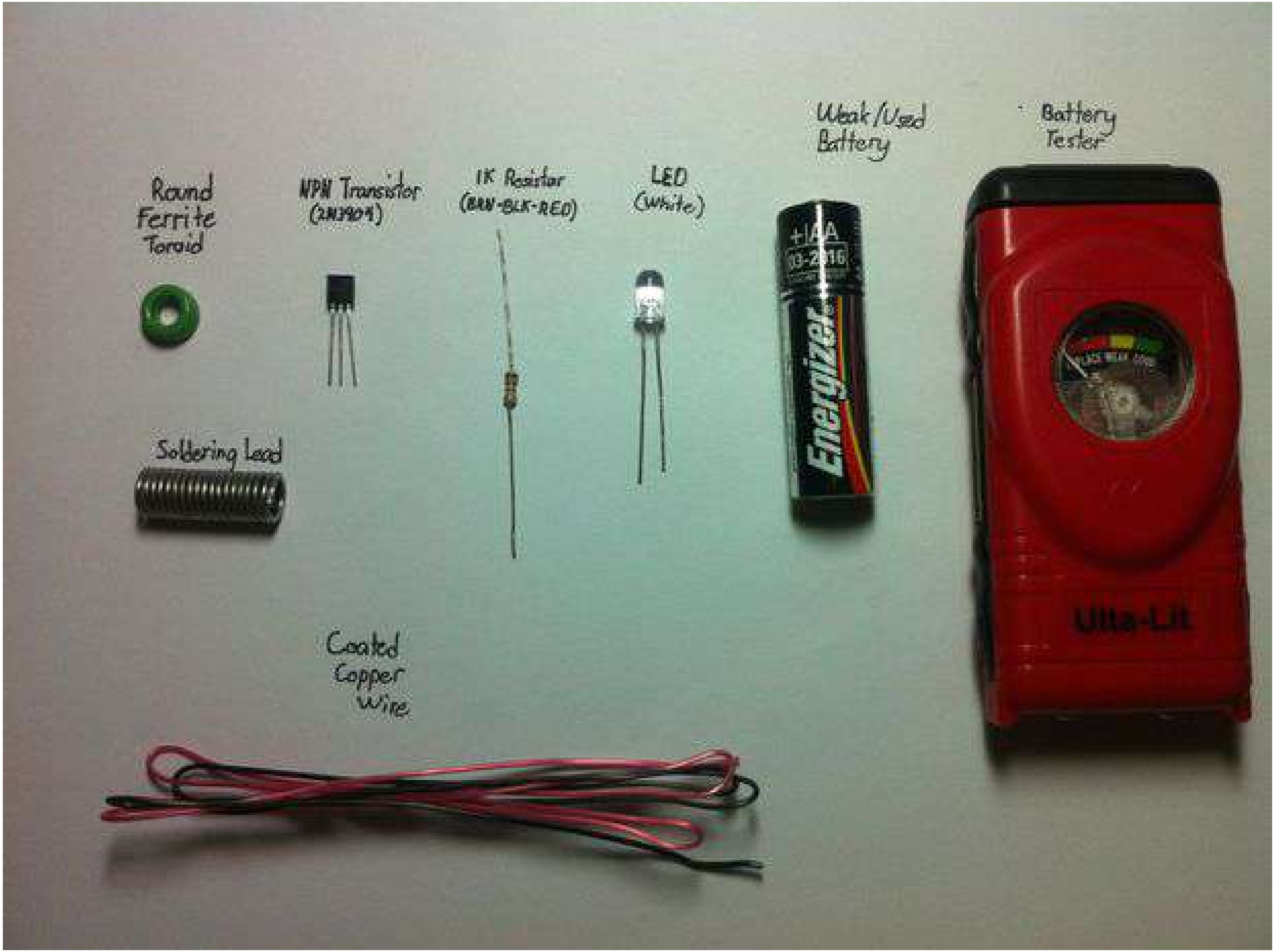

AA FORMAT-E91
LR6-AM3-1.5V

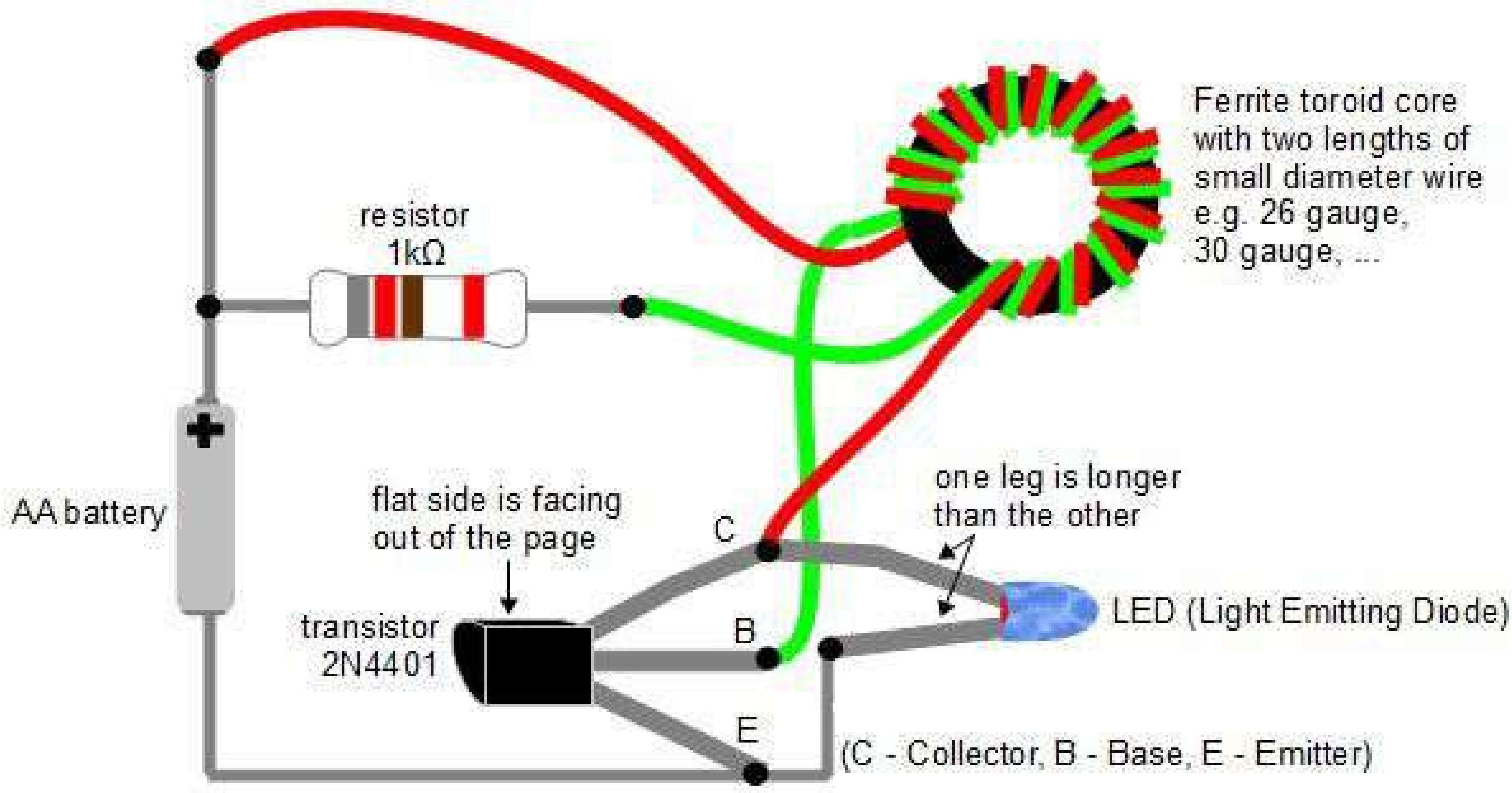

LED Terminals
Flat
+
Anode
-
Cathode
-
+
2N3904 NPN Transistor Terminals
E B C
E = Emitter
B = Base
C = Collector
B
C
E


2N3904 NPN Transistor
Terminals
E B C
E = Emitter
B = Base
C = Collector

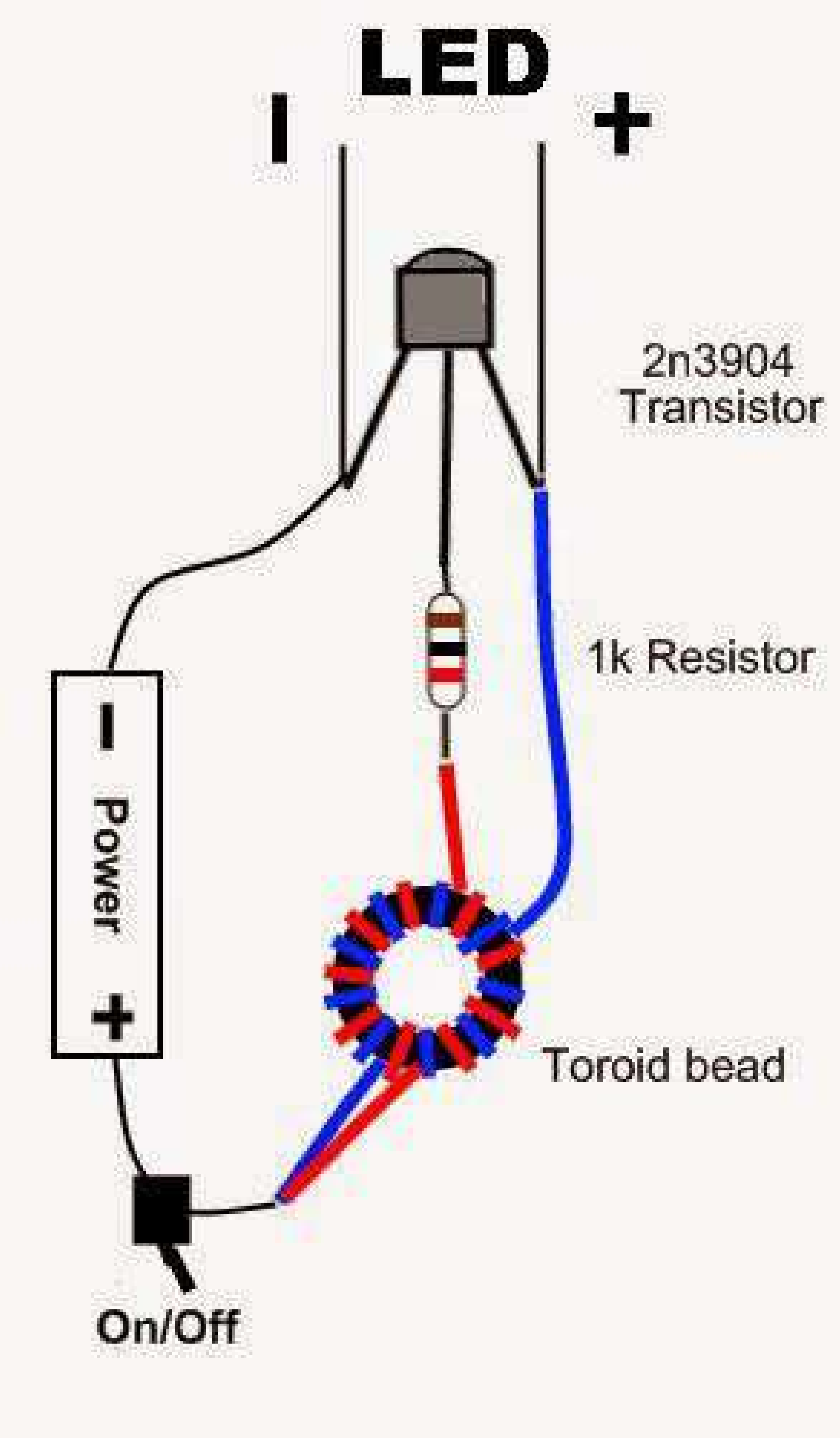


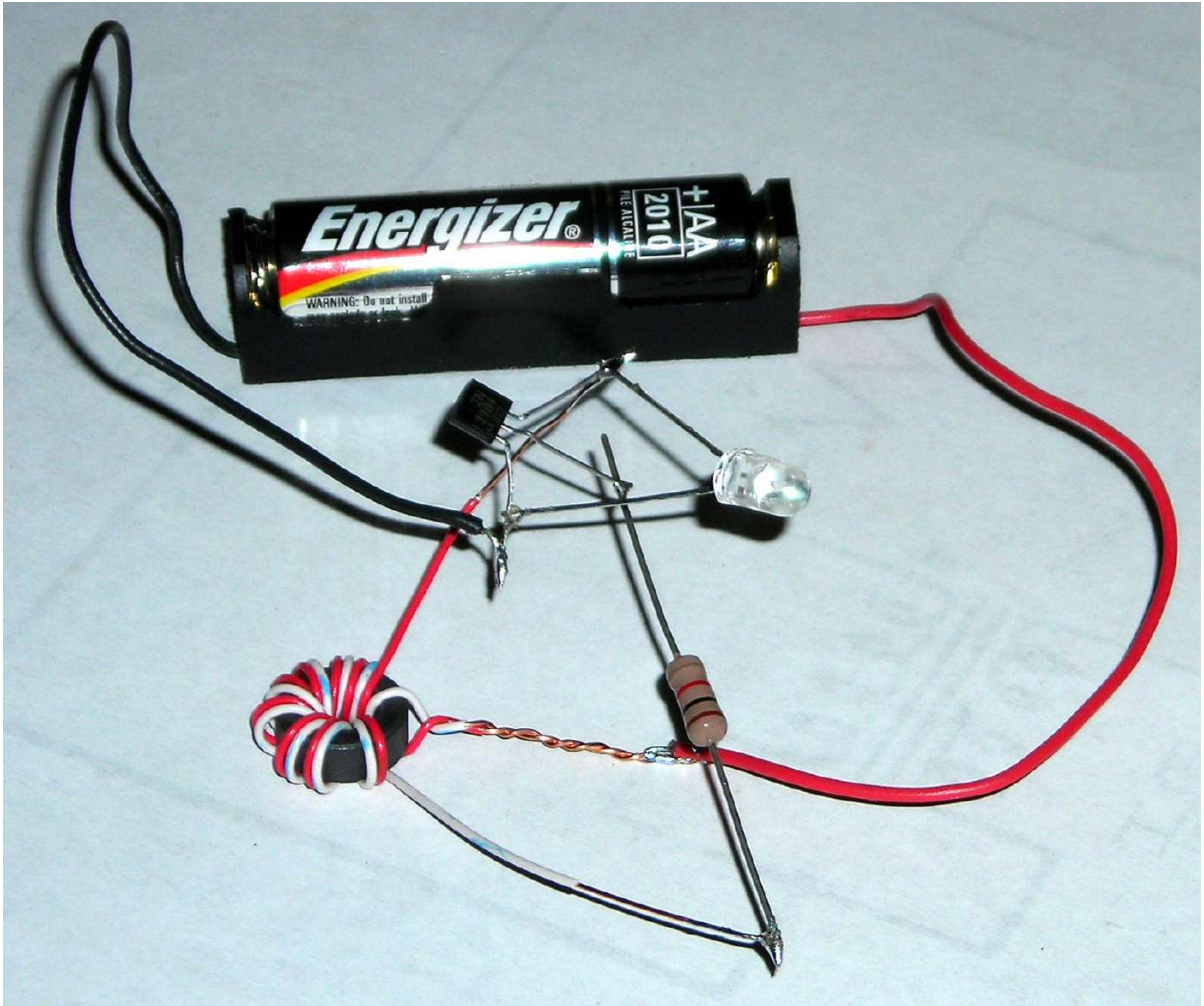

Transistor Terminals
E B C
2N3904
(NPN Transistor)
LED Terminals
Negative Side (Cathode)
Flat Edge
Short Wire
Postive Side (Anode)
Long Wire

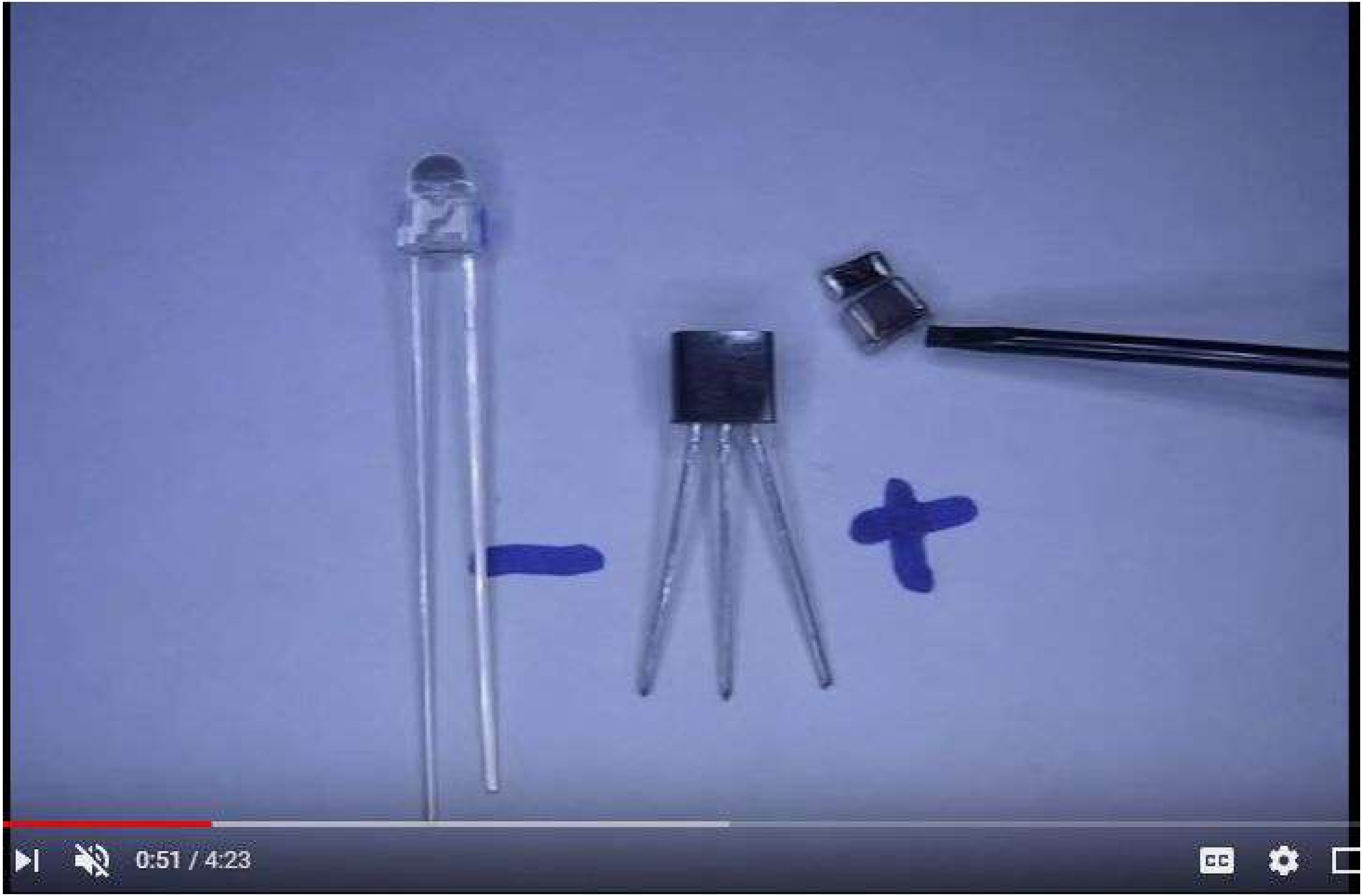

Round Ferrite Toroid
NPN Transistor (2N3904)
1K Resistor (BRN-BLK-RED)
LED (White)
Weak/Used Battery
Battery Tester
Soldering Lead
Coated Copper Wire
+AA
Energizer
Ulta-Lit



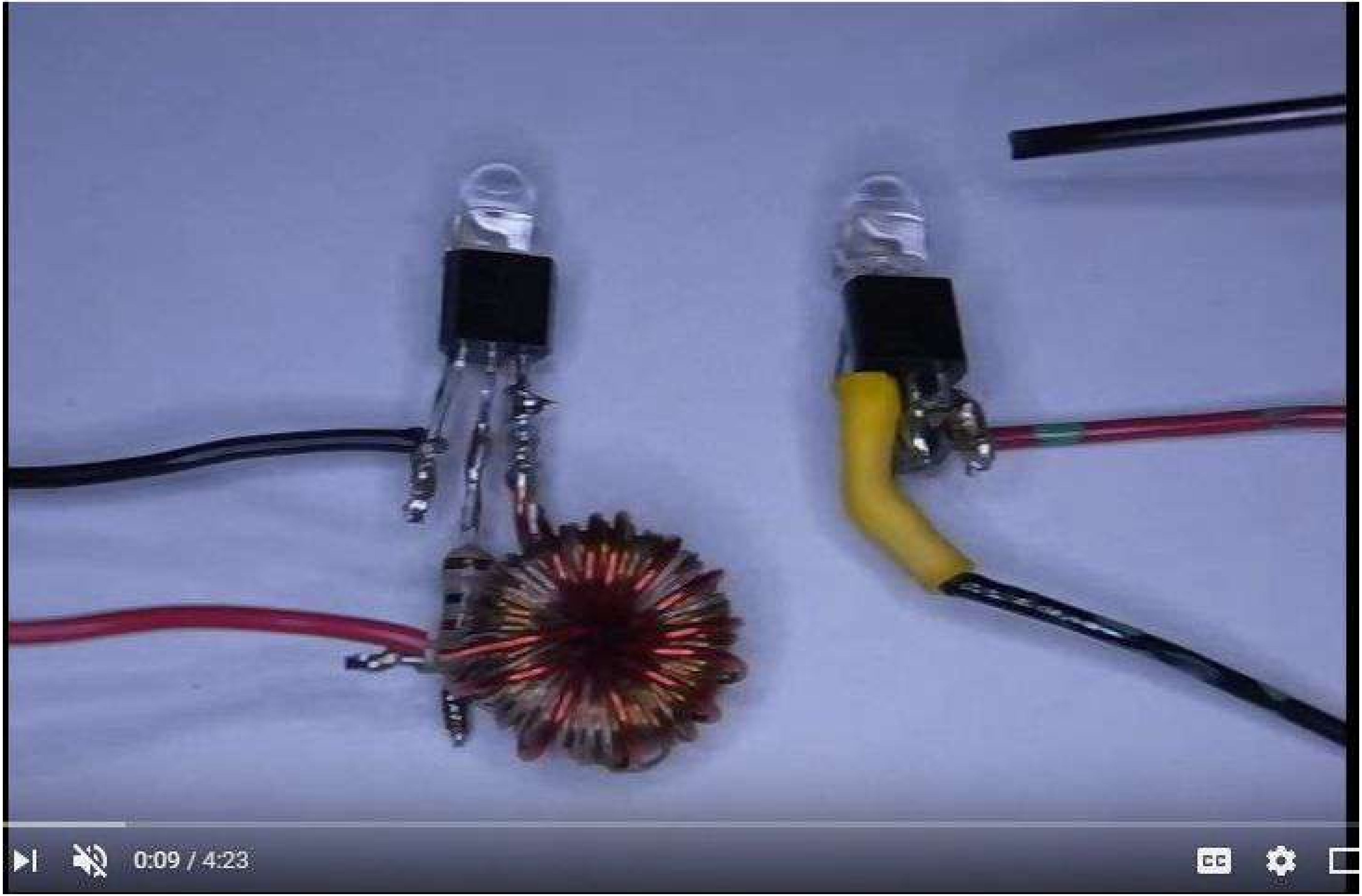
Ferrite toroid core
with two lengths of
small diameter wire
e.g. 26 gauge,
30 gauge, ...
resistor
1kΩ
AA battery
flat side is facing
out of the page
transistor
2N4401
C
B
E
one leg is longer
than the other
LED (Light Emitting Diode)
(C - Collector, B - Base, E - Emitter)

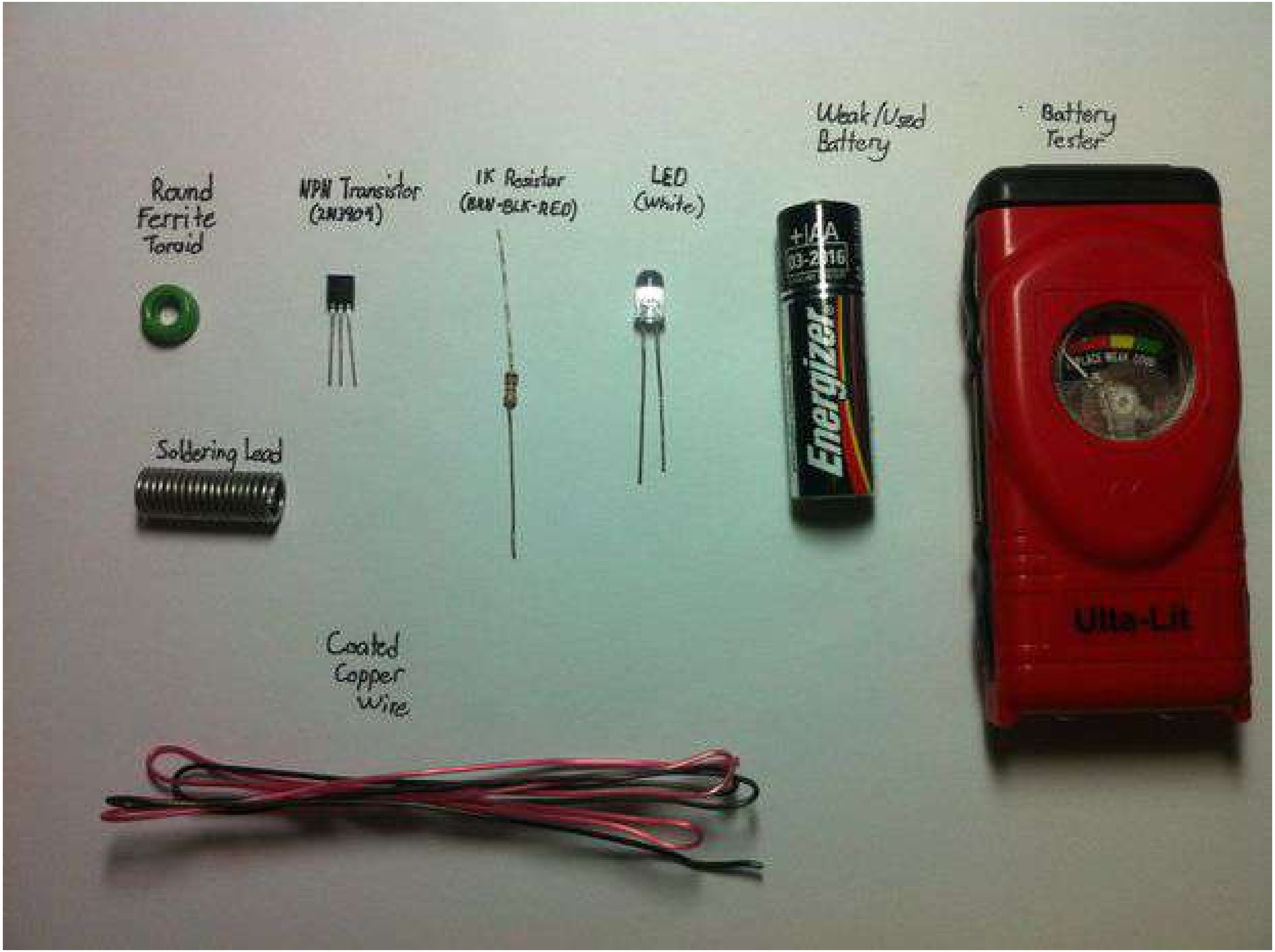

LED
I
+
2n3904
Transistor
1k Resistor
–
Power
+
Toroid bead
On/Off


Energizer
WARNING: Do not install
AA
2010


0:51 / 4:23


3:25 / 4:23


0:09 / 4:23
CC


Round Ferrite Toroid
NPN Transistor (2N3904)
1K Resistor (BRN-BLK-RED)
LED (White)
Weak/Used Battery
Battery Tester
Soldering Lead
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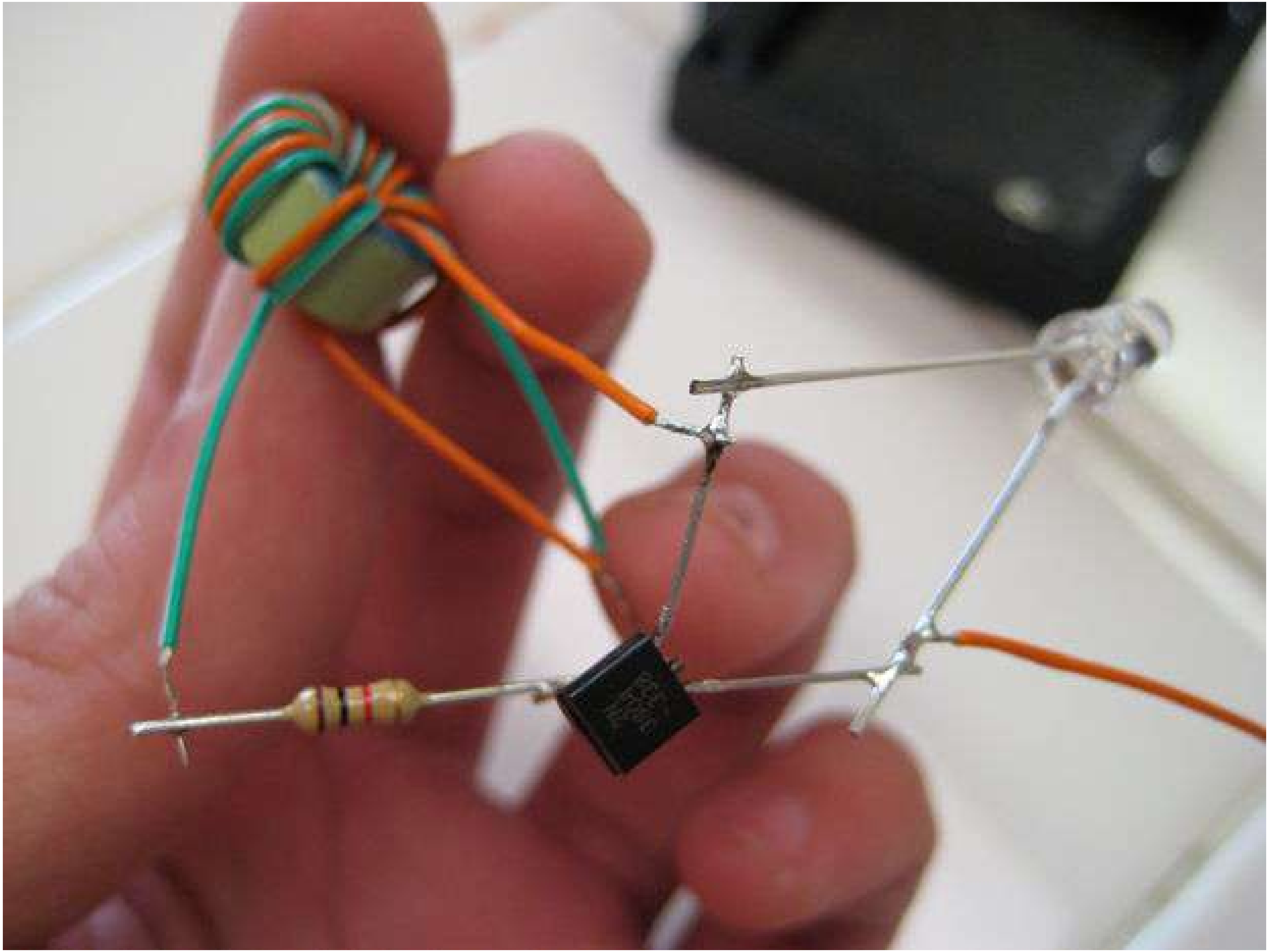
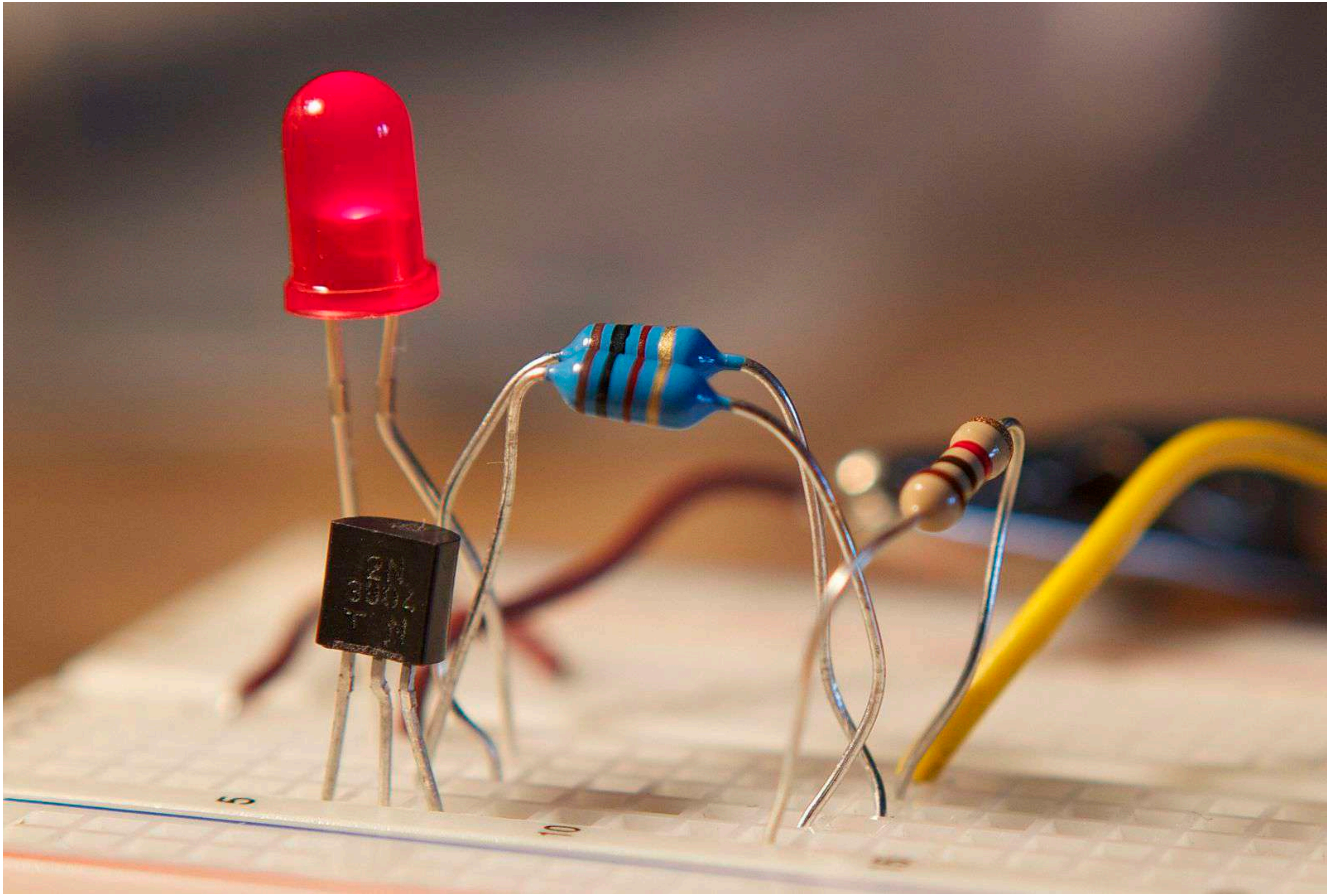
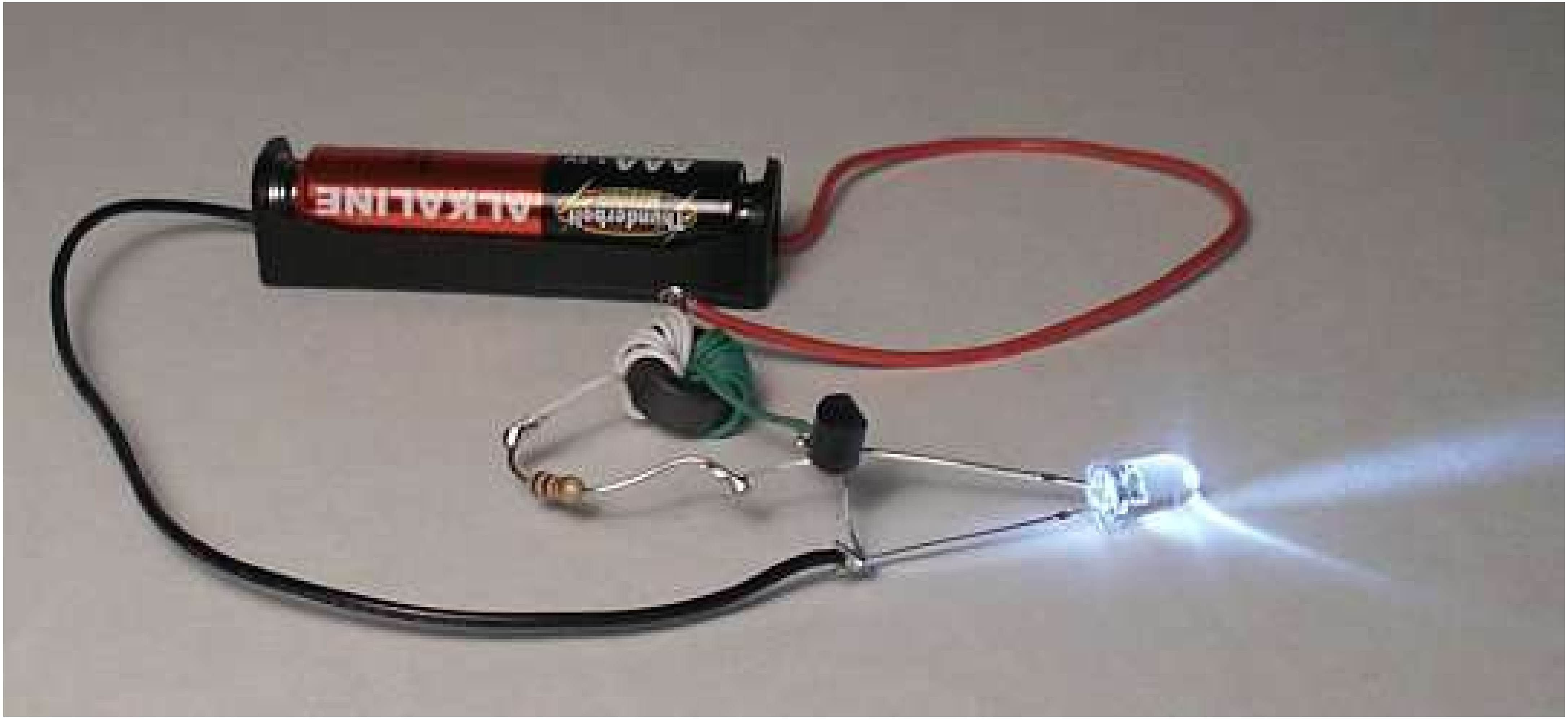
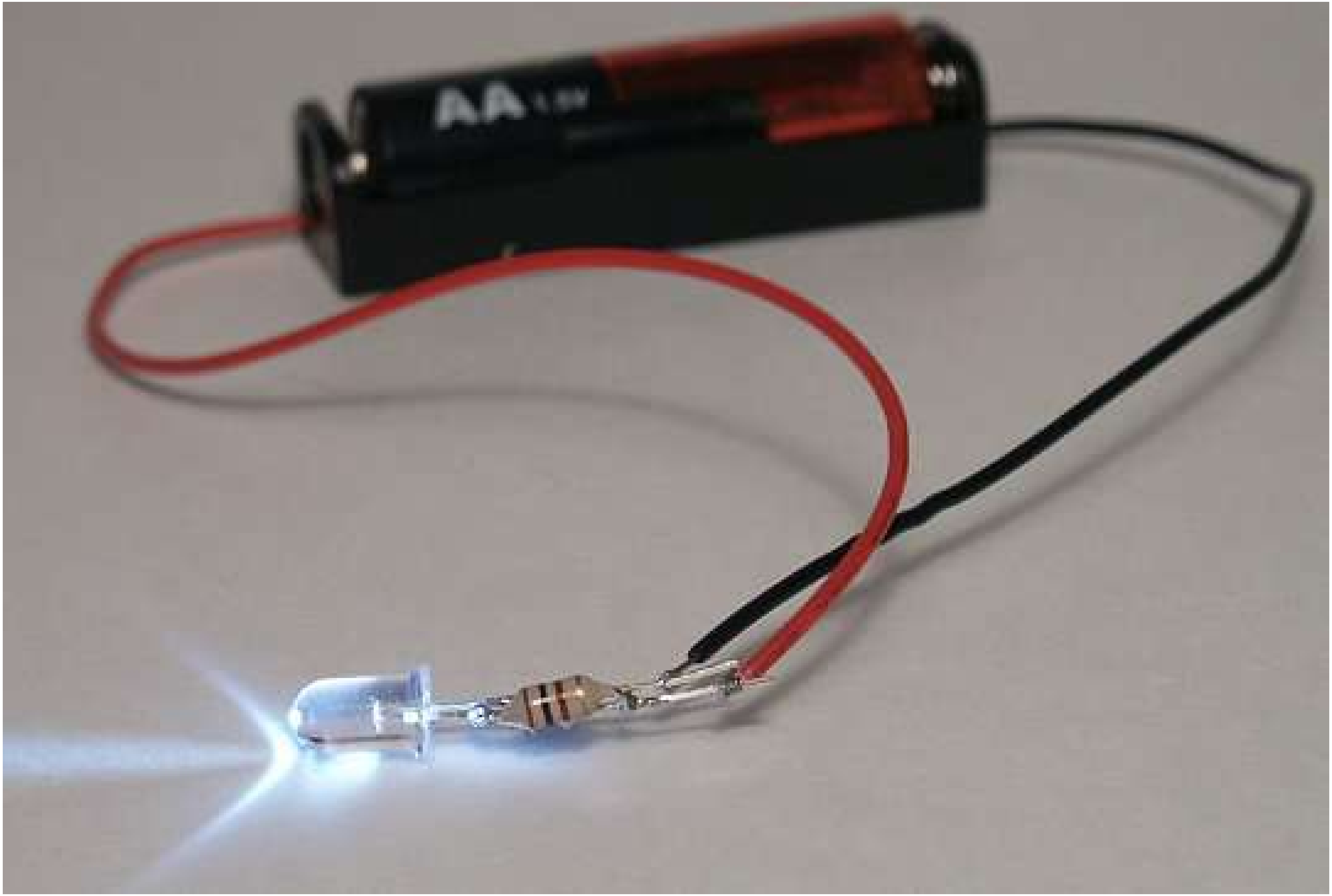
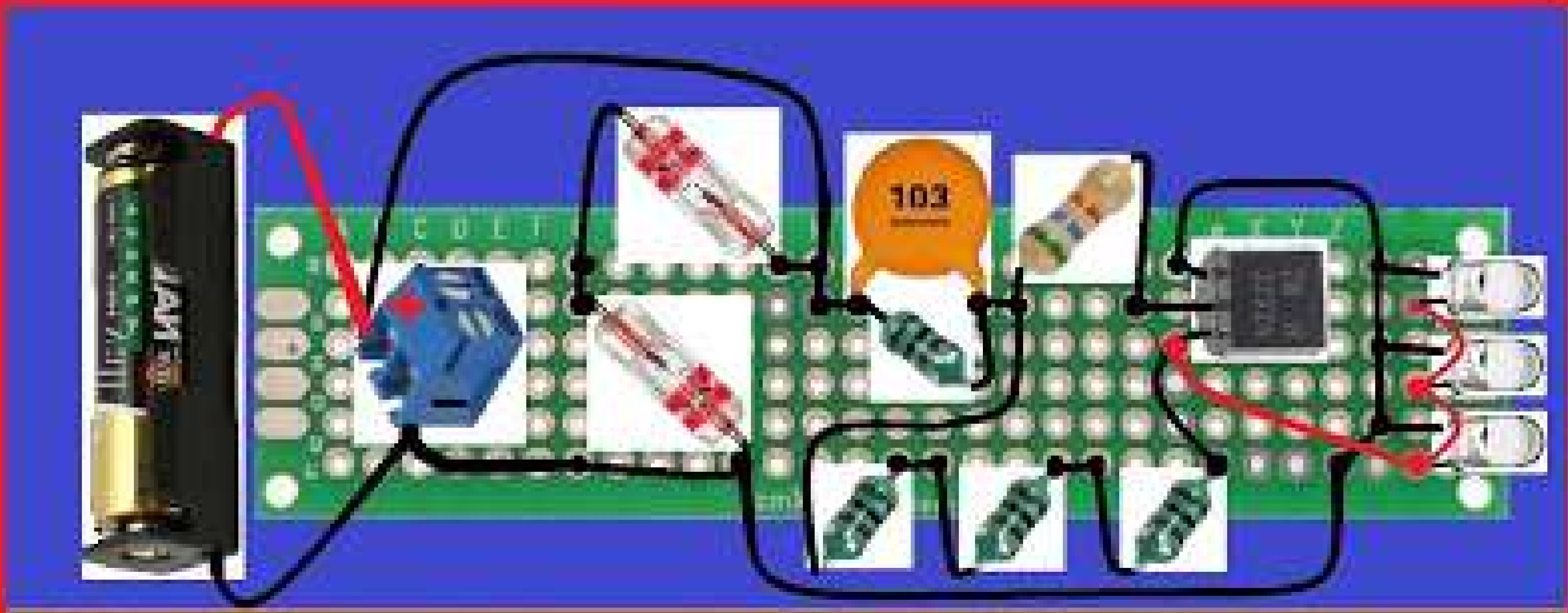


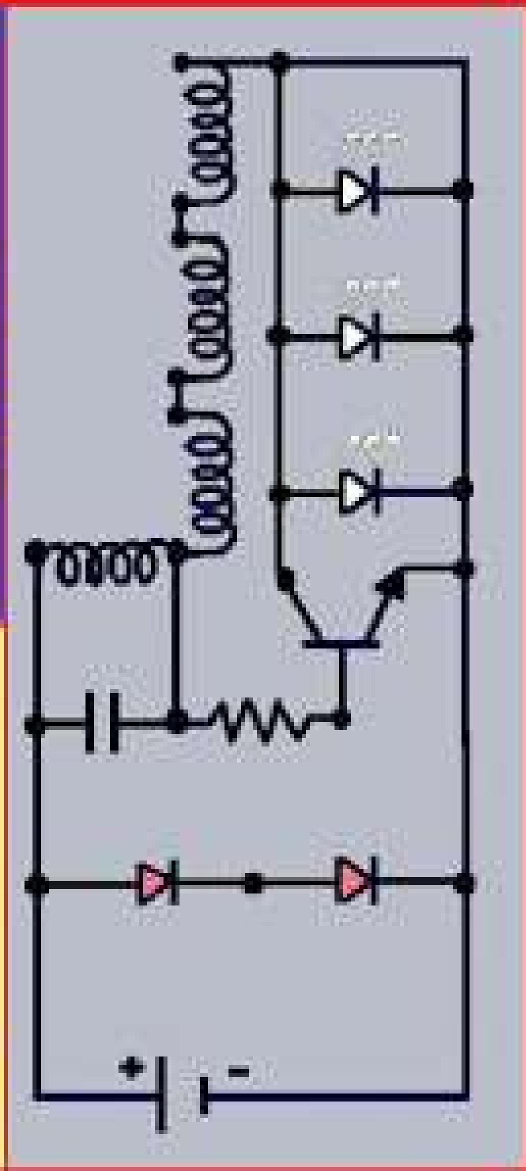

2N
3904
5
10

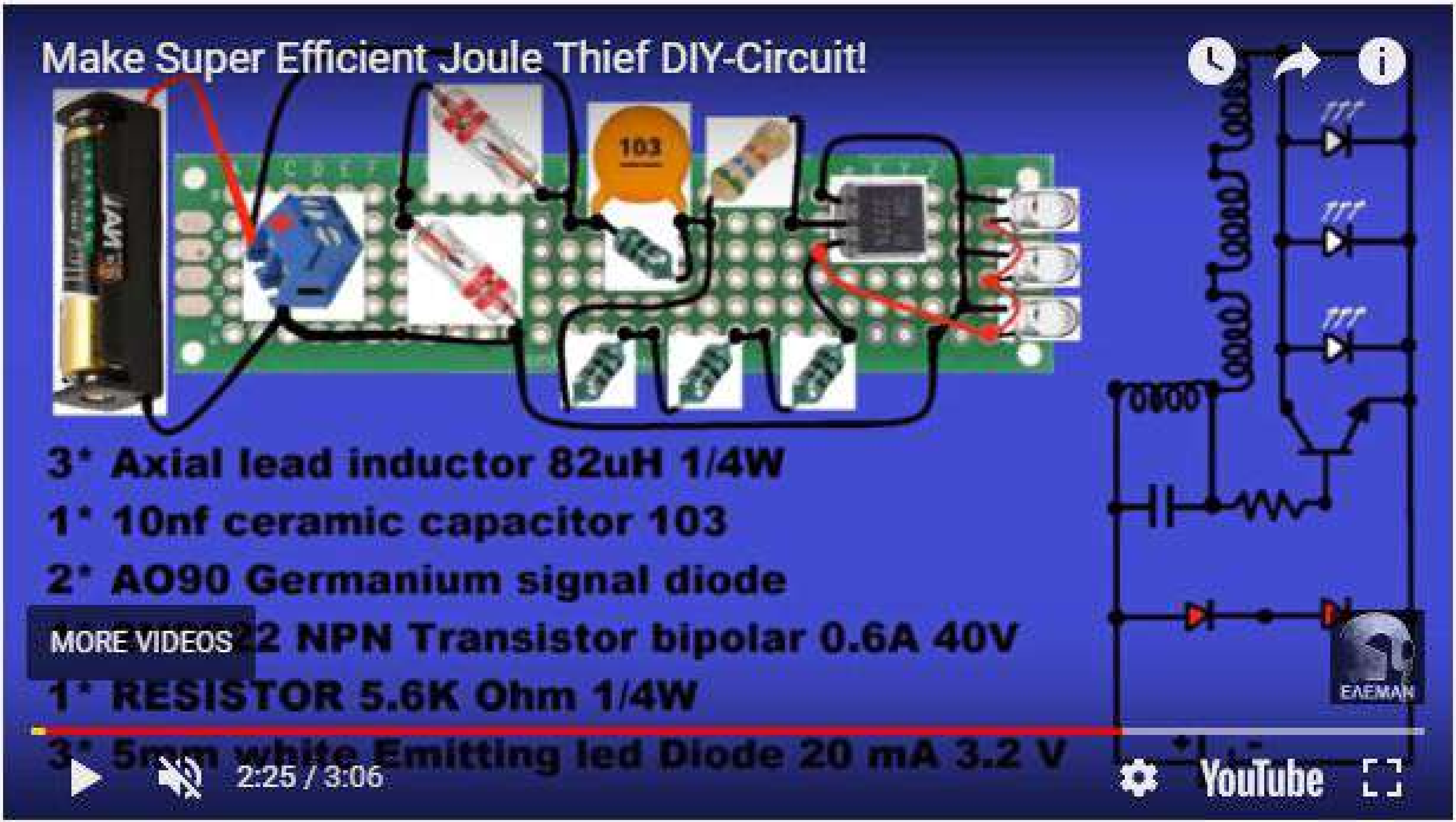

ALKALINE

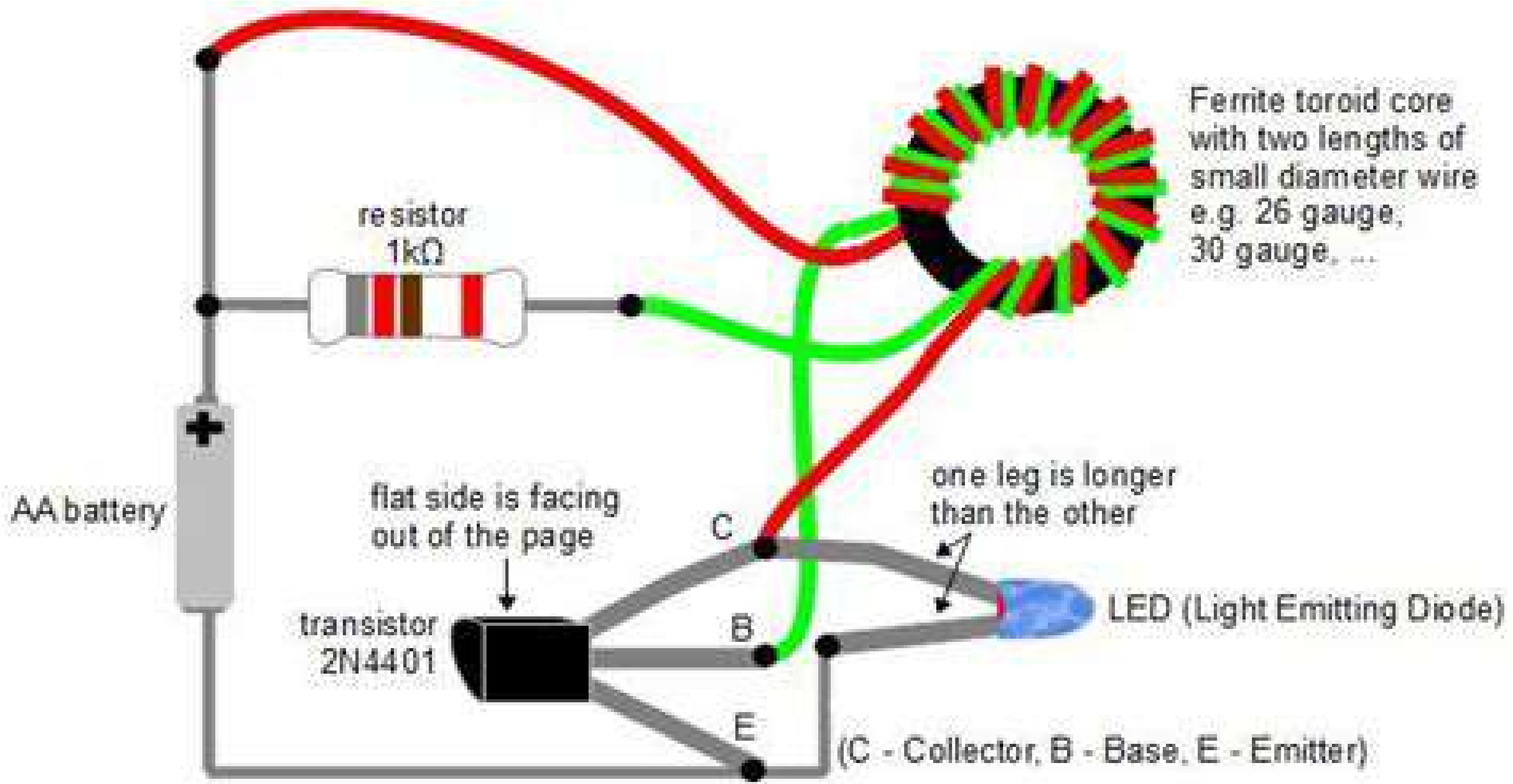

AA

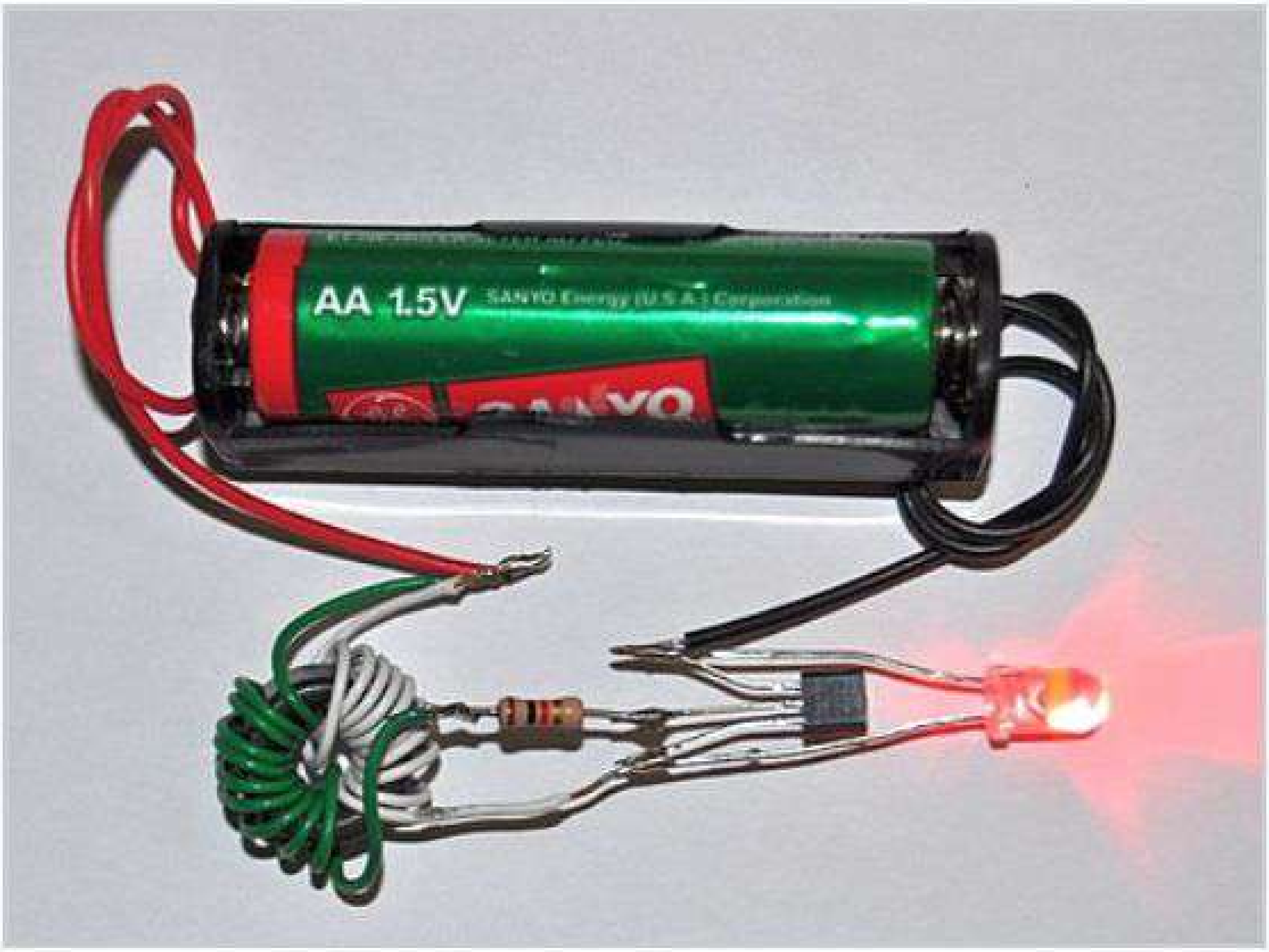


3* Axial lead inductor 82uH 1/4W
1* 10nf ceramic capacitor 103
2* AO90 Germanium signal diode
1* 2N2222 NPN Transistor bipolar 0.6A 40V
1* RESISTOR 5.6K Ohm 1/4W
3* 5mm white Emitting led Diode 20 mA 3.2 V



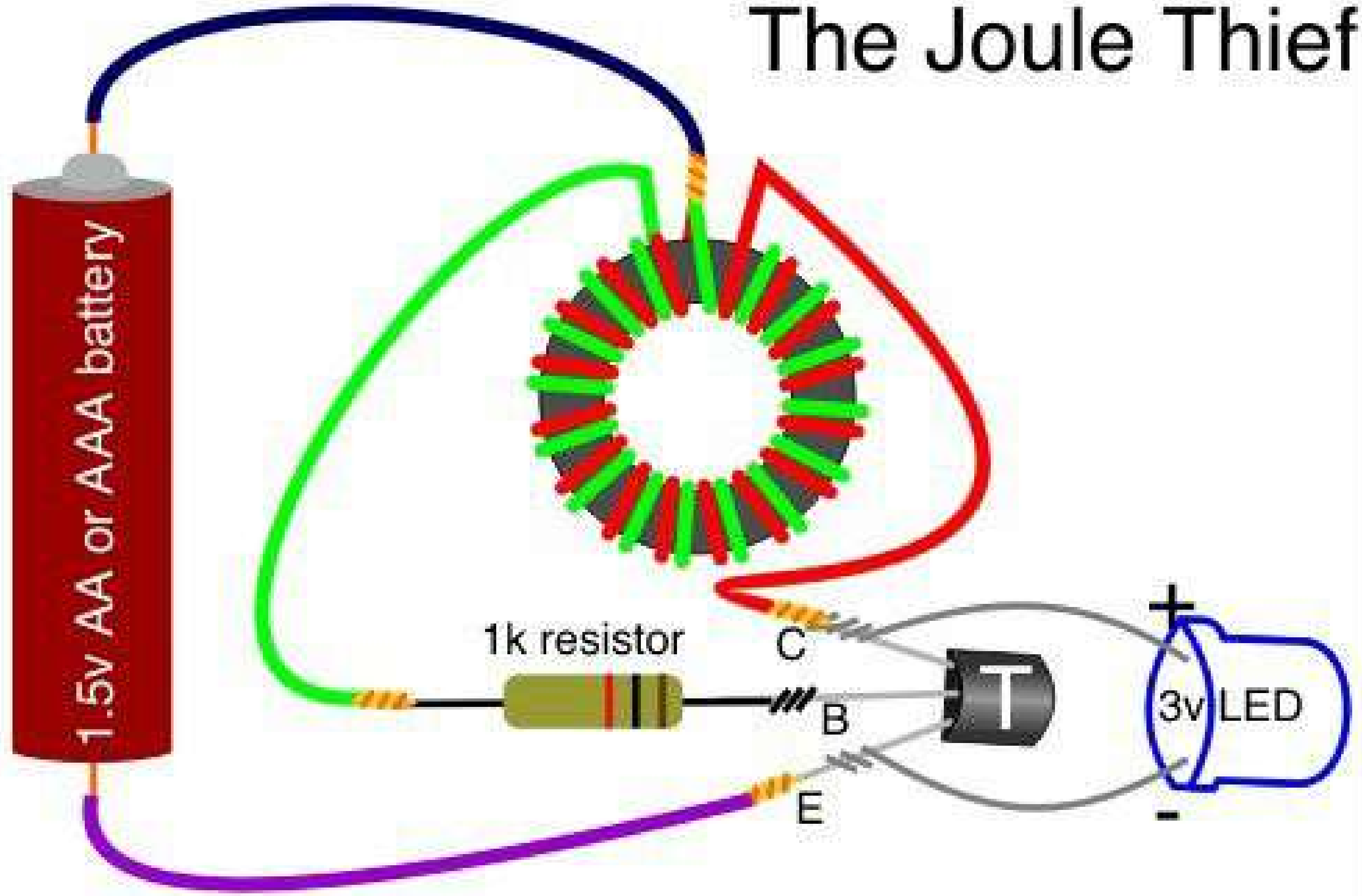

Make Super Efficient Joule Thief DIY-Circuit!
103
3* Axial lead inductor 82uH 1/4W
1* 10nf ceramic capacitor 103
2* AO90 Germanium signal diode
MORE VIDEOS
2 NPN Transistor bipolar 0.6A 40V
1* RESISTOR 5.6K Ohm 1/4W
3* 5mm white Emitting led Diode 20 mA 3.2 V
2:25 / 3:06
YouTube
ΕΛΕΜΑΝ


Ferrite toroid core
with two lengths of
small diameter wire
e.g. 26 gauge,
30 gauge, ...
resistor
1kΩ
AA battery
one leg is longer
than the other
flat side is facing
out of the page
C
transistor
2N4401
B
LED (Light Emitting Diode)
E
(C - Collector, B - Base, E - Emitter)



A conventional joule thief, shows components and how they are connected. This example uses a red LED. A ferrite toroid is wound to form a coil with primary (white) and feedback (green) windings. A 2N2222A transistor and 1000 ohm resistor are used.

The Joule Thief

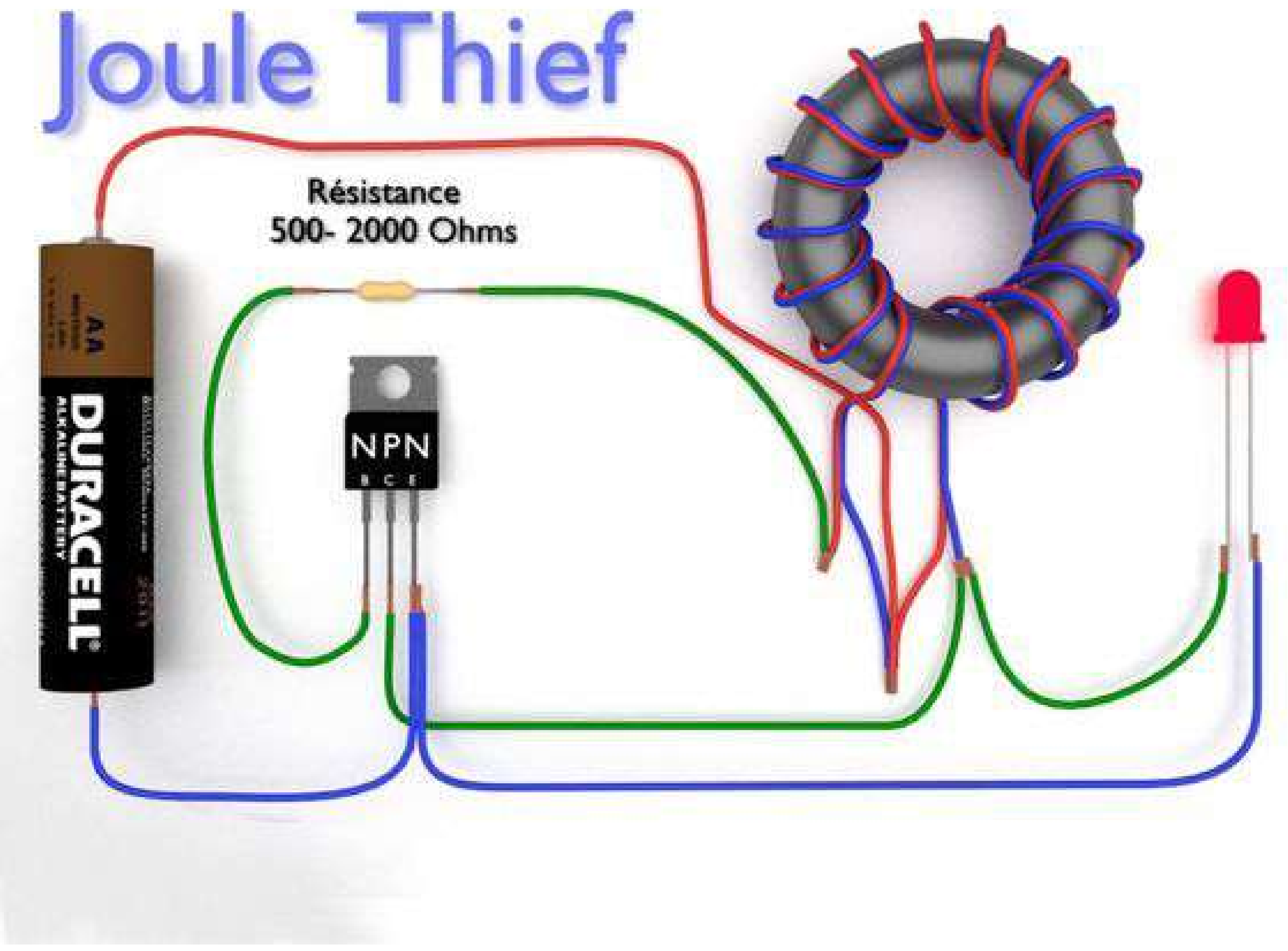


Transistor shown (T) is 2N3904 (can also use 2N2222).

Note LED pins - negative is shorter and has flat on bulb edge.

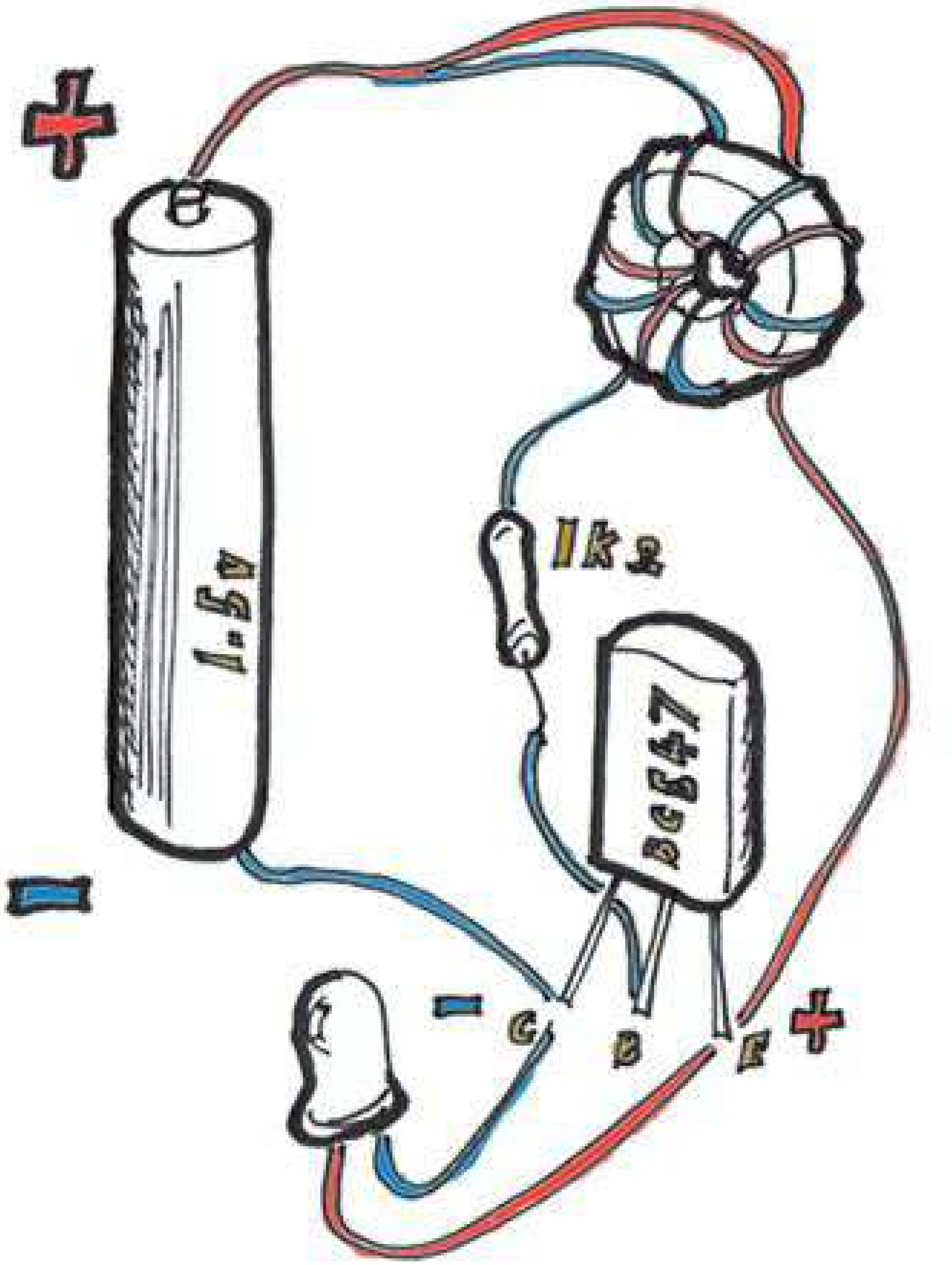
2 wires round ferrite ring are wound together, then start of one joined to end of other.

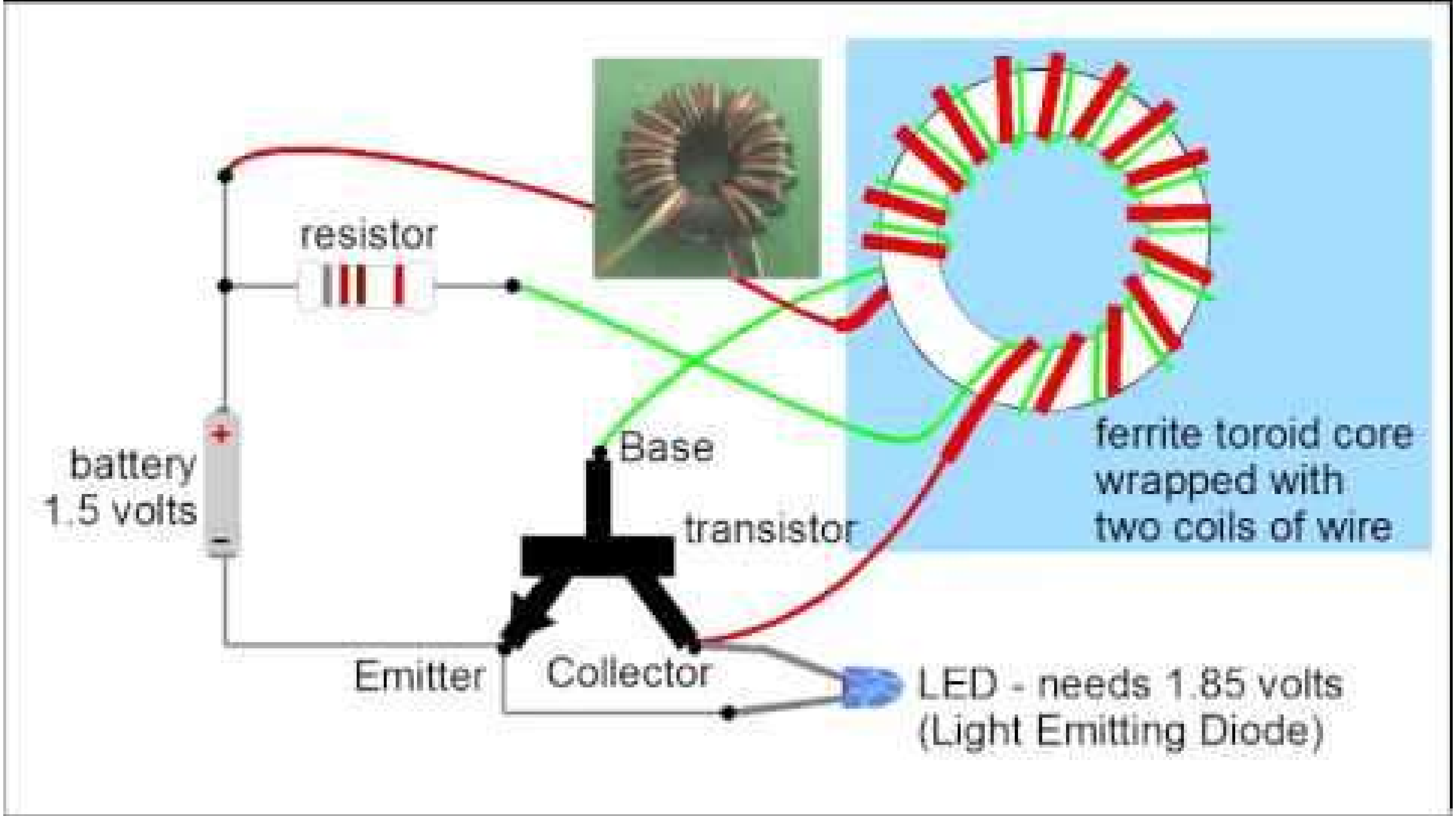
Try adding more and more LEDs...

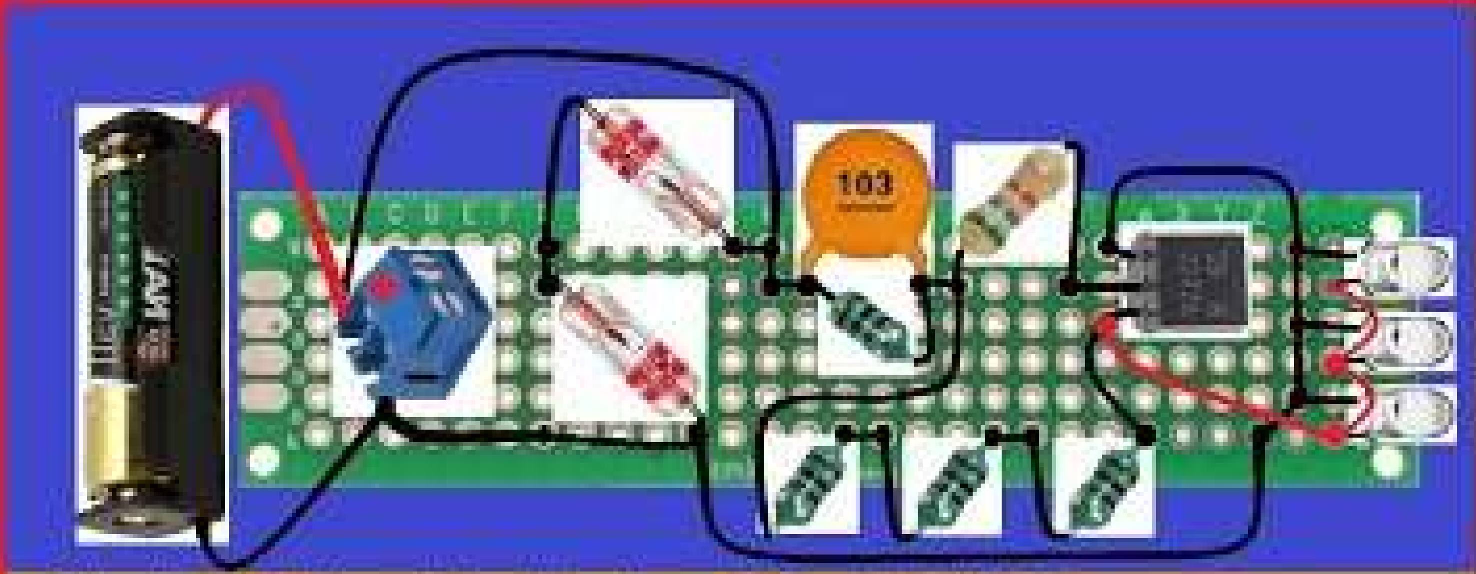

Joule Thief
Résistance
500- 2000 Ohms
AA
DURACELL
ALKALINE BATTERY
NPN
B C E

Its a Rubbish Challenge
Dog Light

Joule Thief
electronics circuit




resistor
battery
1.5 volts
Base
transistor
Emitter
Collector
ferrite toroid core
wrapped with
two coils of wire
LED - needs 1.85 volts
(Light Emitting Diode)



3* Axial lead inductor 82uH 1/4W

1* 10nf ceramic capacitor 103

2* AO90 Germanium signal diode

1* 2N2222 NPN Transistor bipolar 0.6A 40V

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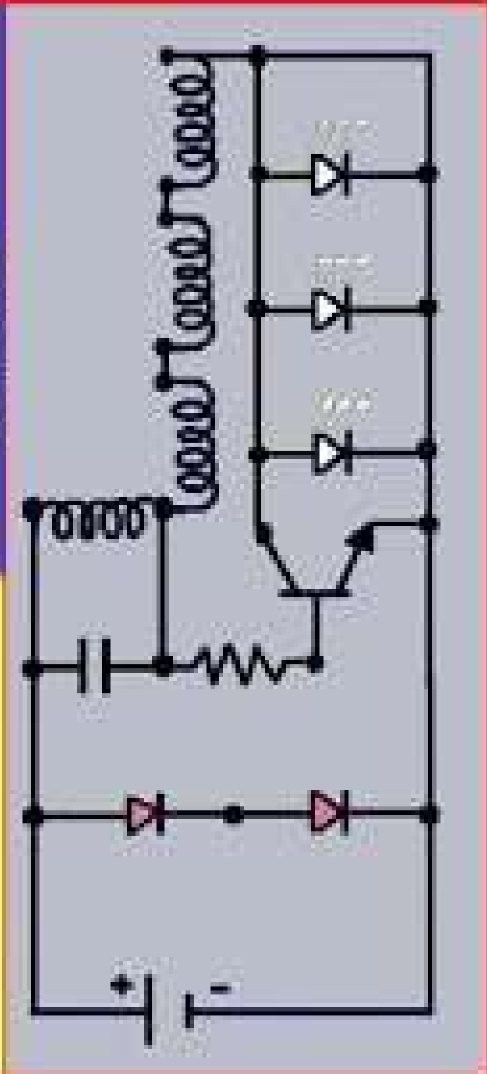
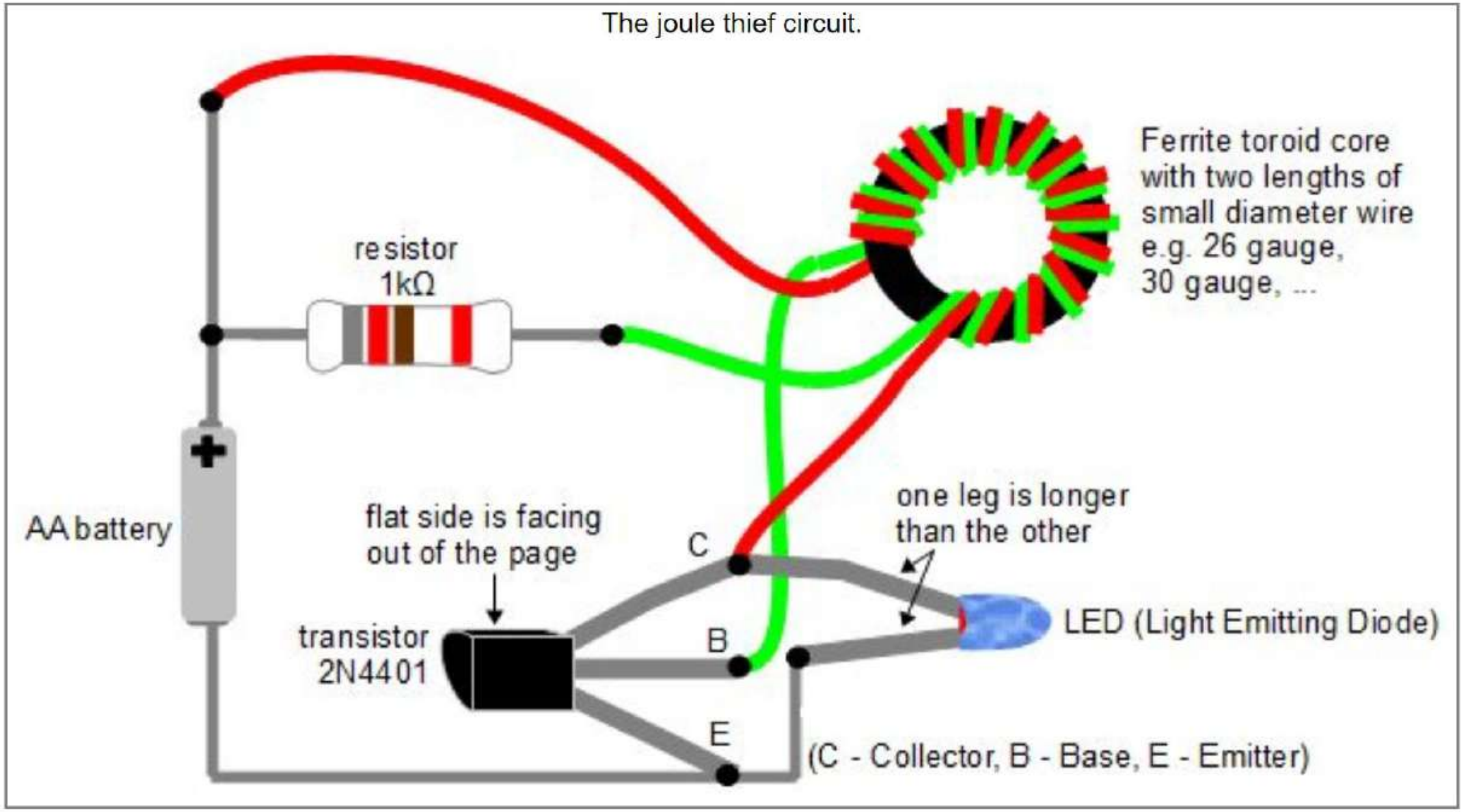



AA 1.5V
SANYO Energy (U.S.A.) Corporation

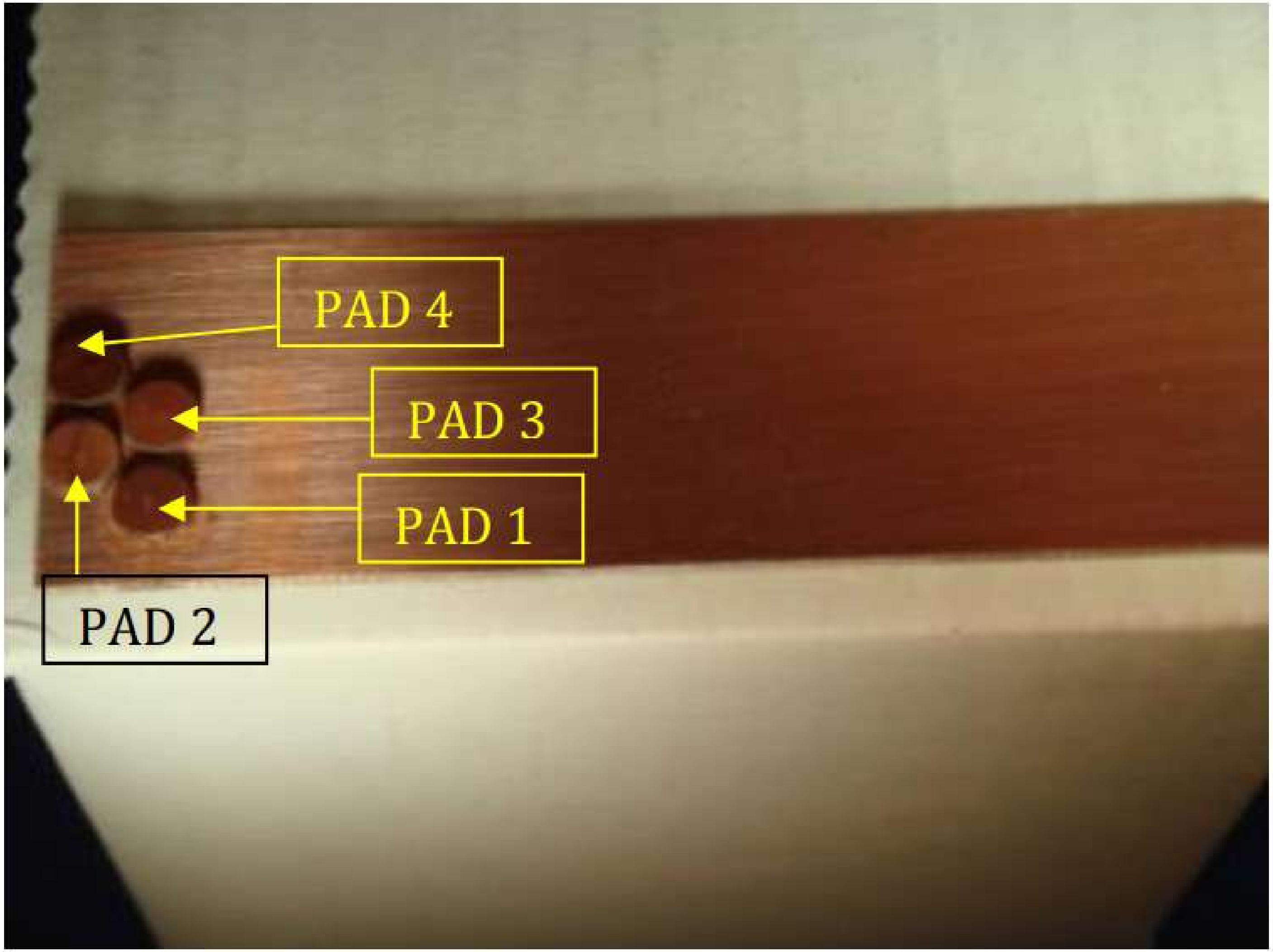


Transistor - The legs of the transistor can be determined by noticing that there's a flat side to the transistor case. See the diagram above. A large number of transistors have been reported to work: 2N4401, NET123AP, BC547B, 2SC2500, BC337, PN2222, to name just a few.

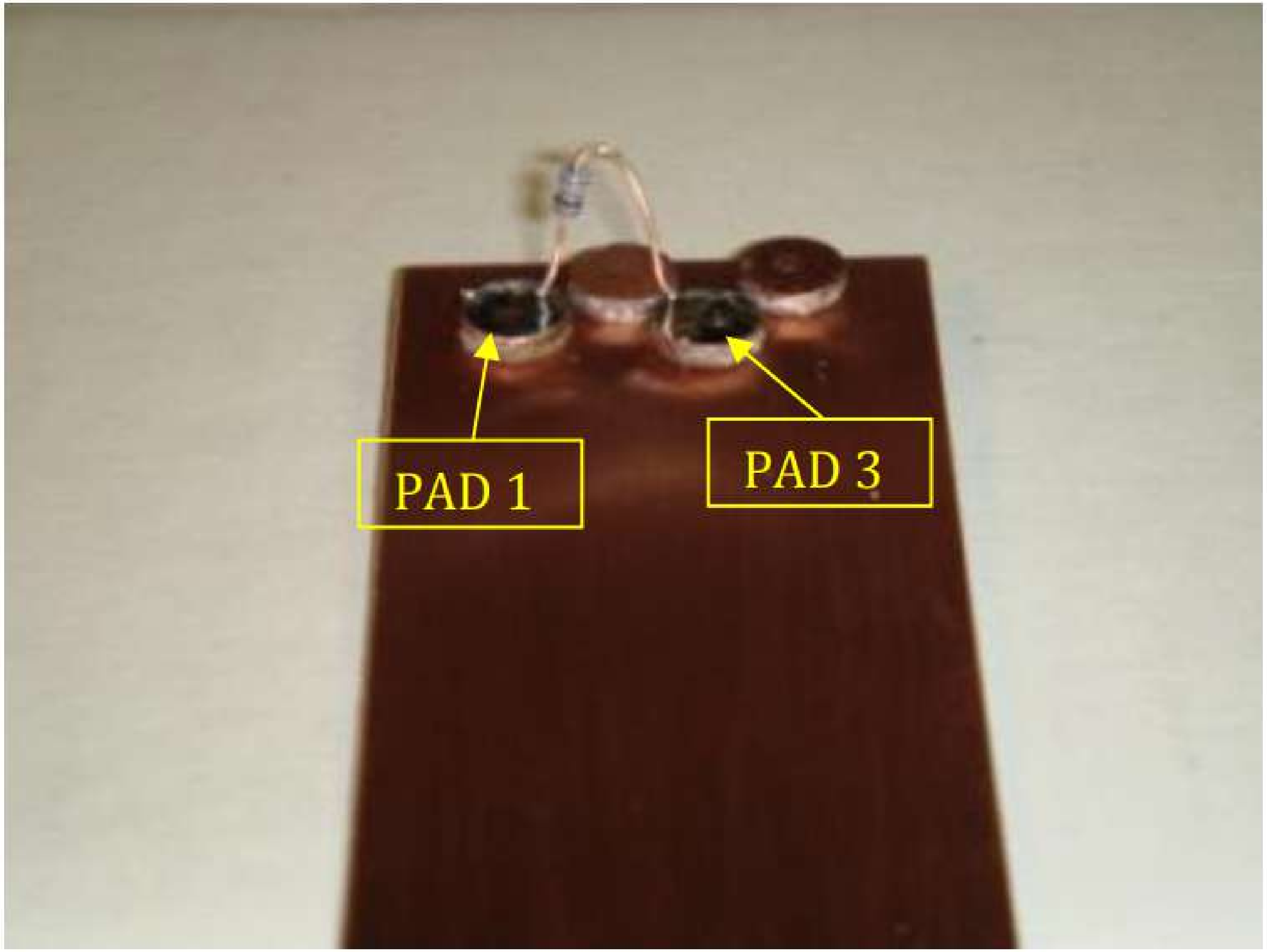
LED - One leg of the LED is longer than the other leg. Use this to determine which one goes where. See the diagram above.

Resistor - The diagram says use a 1 kilo ohm resistor but I've used an 820 ohm one just fine. I've also seen a 2 kilo ohm one in use. Use whatever works for you. You can also use a potentiometer (a variable resistor) so that you can easily adjust it to select the resistance that gives the best light.

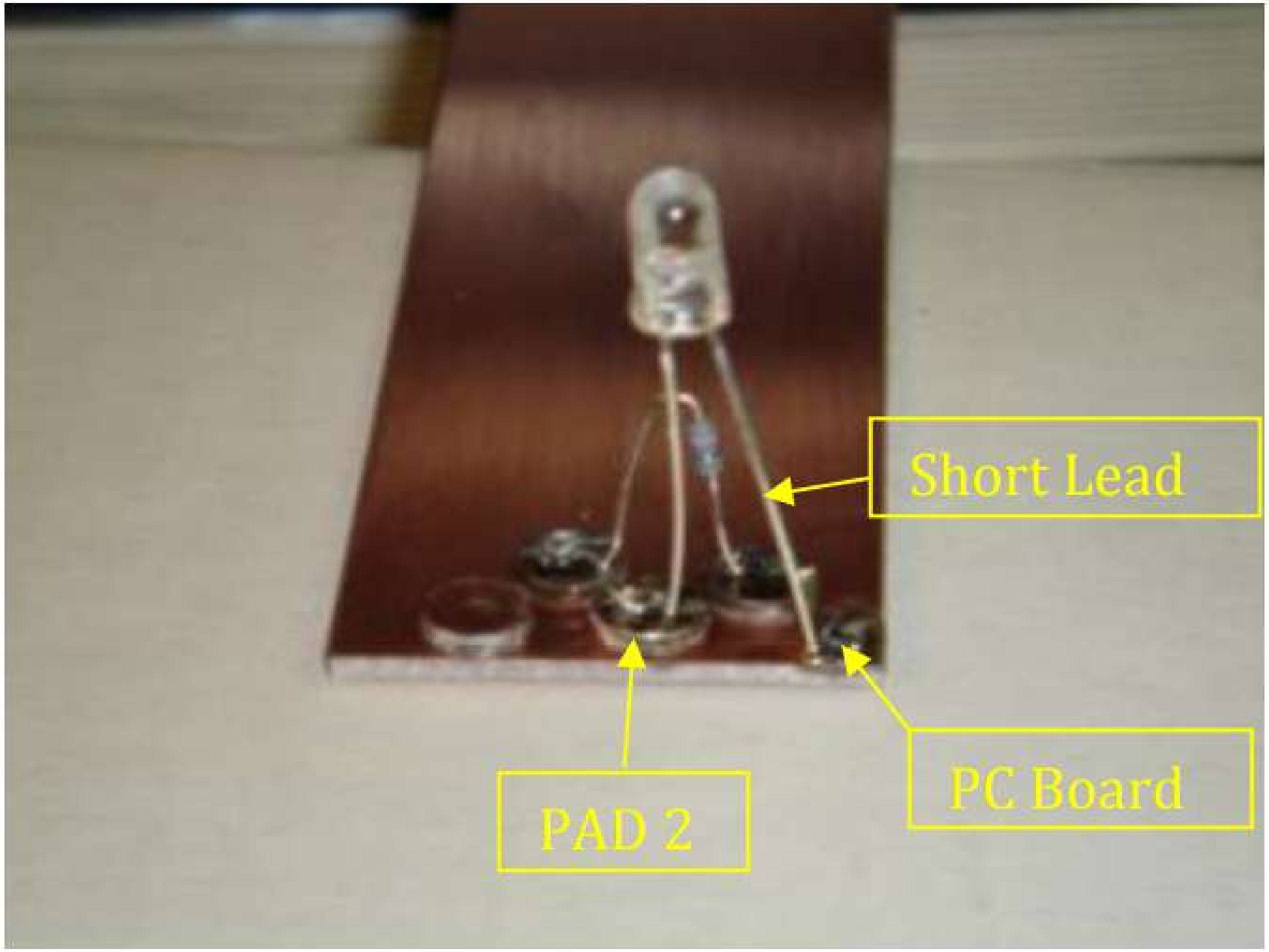
Toroid ferrite core - Some people have gotten these by opening up compact fluorescent lightbulbs (CFLs). I took mine out of some device whose original function I don't know. To get it working, my first one had just 13 turns for each wire and I used a 30 gauge wire and a 26 gauge wire. The wire must be insulated. A variety of number of turns will work. This is something you can play with. Look at the diagram carefully to determine where the wires connect to.



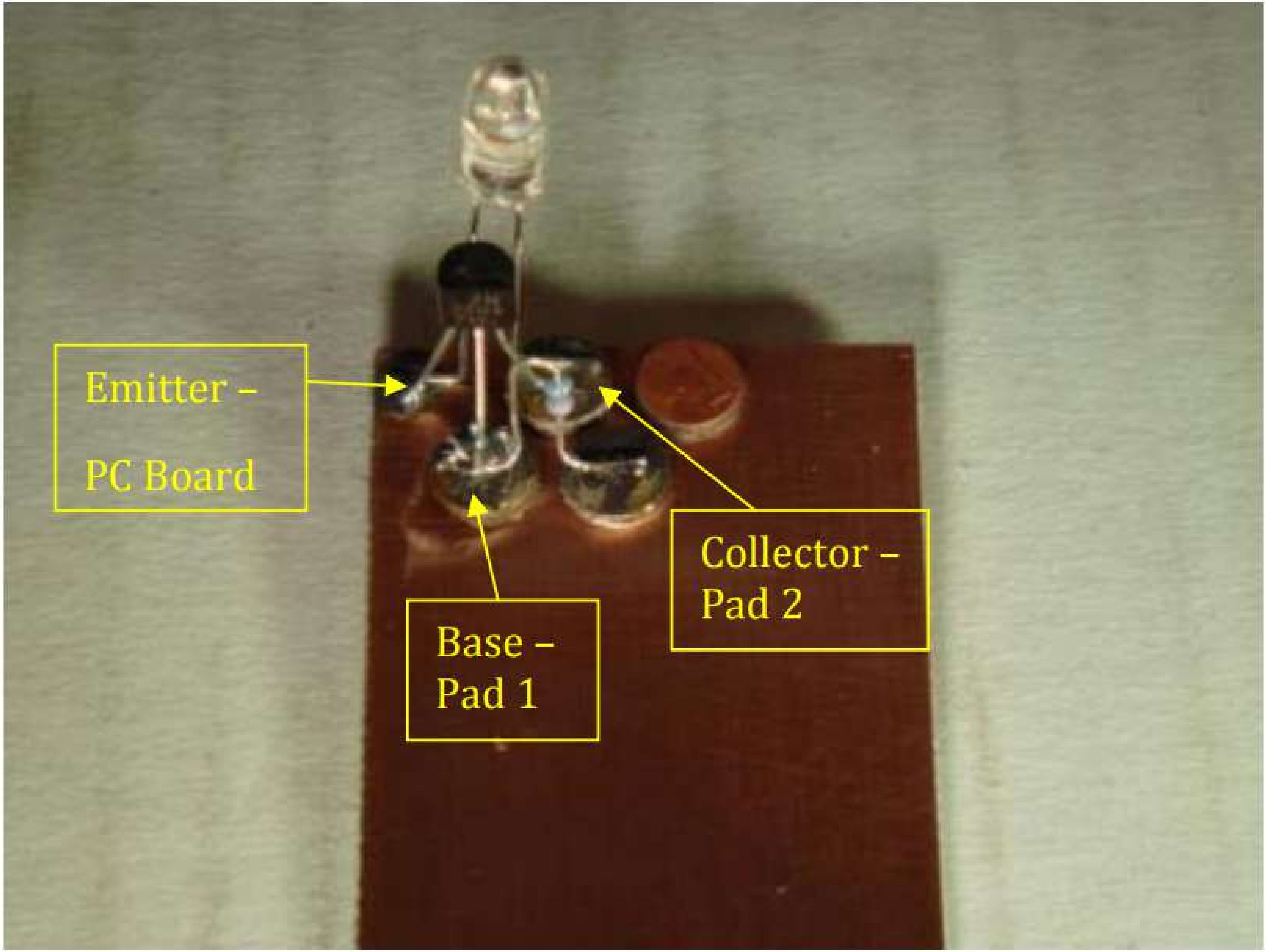
Superglue four pads to the PC board. Make sure they are not touching each other. You should have roughly 1/8 inch between the pads. Apply a small drop of superglue on the board and press the pad onto the board with the small dimple up. Use a small screwdriver to hold pressure on the pad until the glue dries (about 10 seconds).



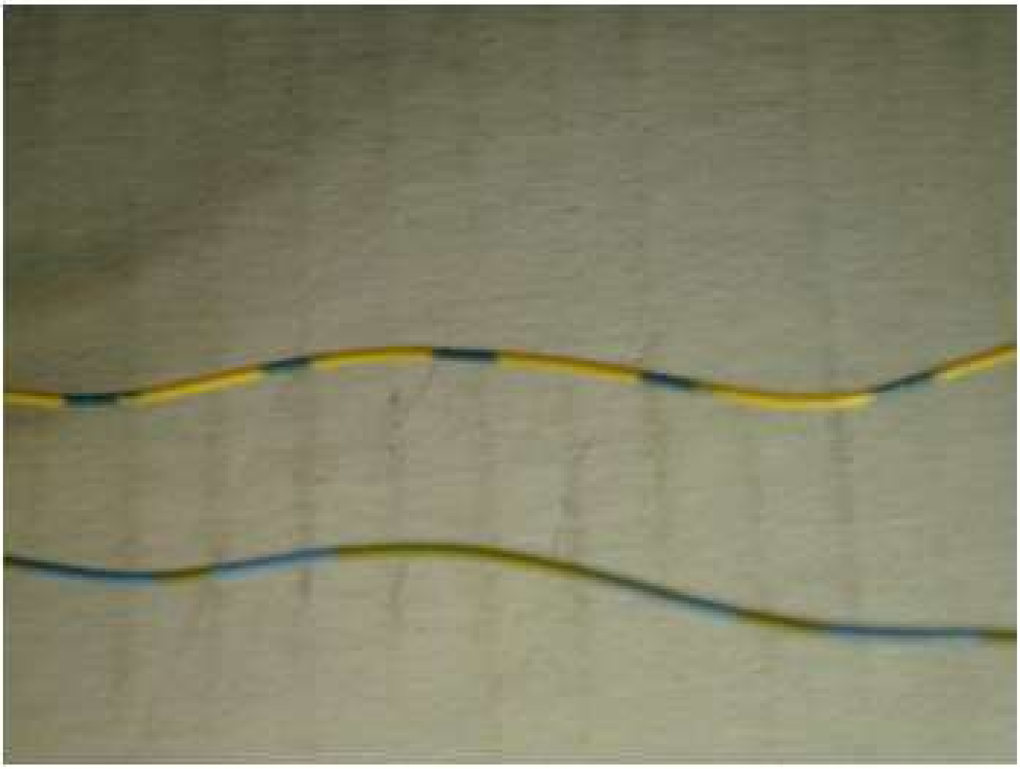
Solder the 1,000 ohm resistor onto pads 1 and 3. When soldering all components, place a 90-degree bend on the ends of the component where they touch the pad to allow better soldering. There is no polarity on a resistor.



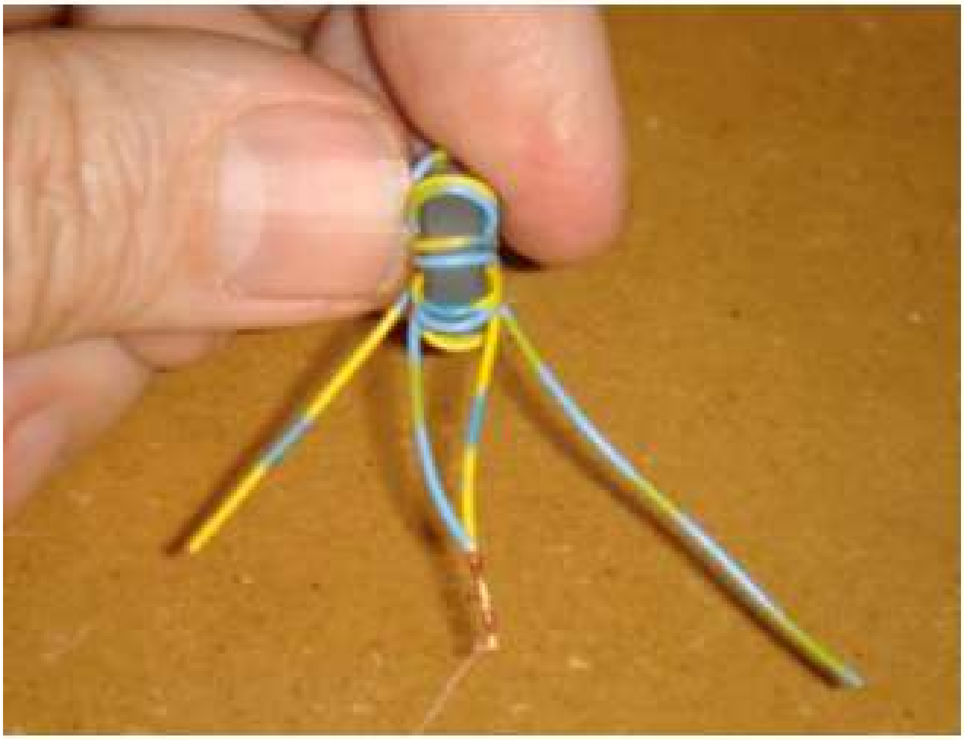
Solder the LED to the board. **VERY IMPORTANT**: Solder the **long lead** to pad 2 and the **short lead** directly to the PC board. The LED will not illuminate of you put it in backwards. If you look into the LED, the anvil shaped part is the lead that gets soldered to the PC board.



Solder the transistor to the board. With the flat part facing you the left lead (emitter) is soldered directly to the PC board. The center lead (base) is soldered to pad 1. The right lead (collector) is soldered to pad 2. Failure to install this part correctly will prevent the Joule Thief from working.



Take the two pieces of wire and **untwist** them if they are twisted. The toroid requires 12 inches of wire. You will wind the toroid with this pair of wires side by side.



Wind the toroid with **9 turns** of the wire. Each turn through the hole in the center counts as one turn. **VERY IMPORTANT:** You must take one wire **from each side of the winding** and twist them together. This makes the transformer windings out of phase. This is critical to operation. Connect one wire of each color.

Solder the twisted wires on the toroid to pad 4. Solder one of the other toroid wires (doesn't matter which one) to pad 2.

Solder the other wire on the toroid to pad 3.

Solder the battery holder. Connect a short piece of wire from the positive terminal (the one without the spring) to pad 4. Solder the negative terminal (the one with the spring) directly to the PC board using a short piece of wire. Use hot glue or some other glue to secure the battery holder to the PC

Step 1 – Wound the Toroid

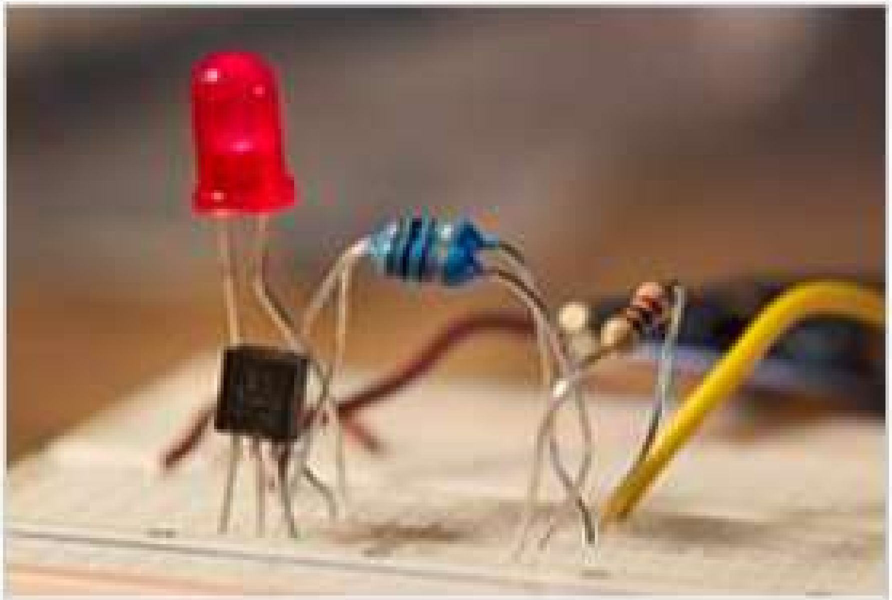
Take the two strands of plastic insulated wire and hold them together. Start off by sticking then through the middle of the toroid until you have 2 cm of wire left to make a connection with later. Keep the two wires together and wrap them around the toroid until you have covered the whole toroid. If you have wire left you can continue until you have about 2 cm of wire free on either side. Remove about a 0.5 cm of the plastic insulation on all four of the wires as in the photo. You have now wound your toroid and we are ready to continue.

Step 2 – Join the two coils of Toroid

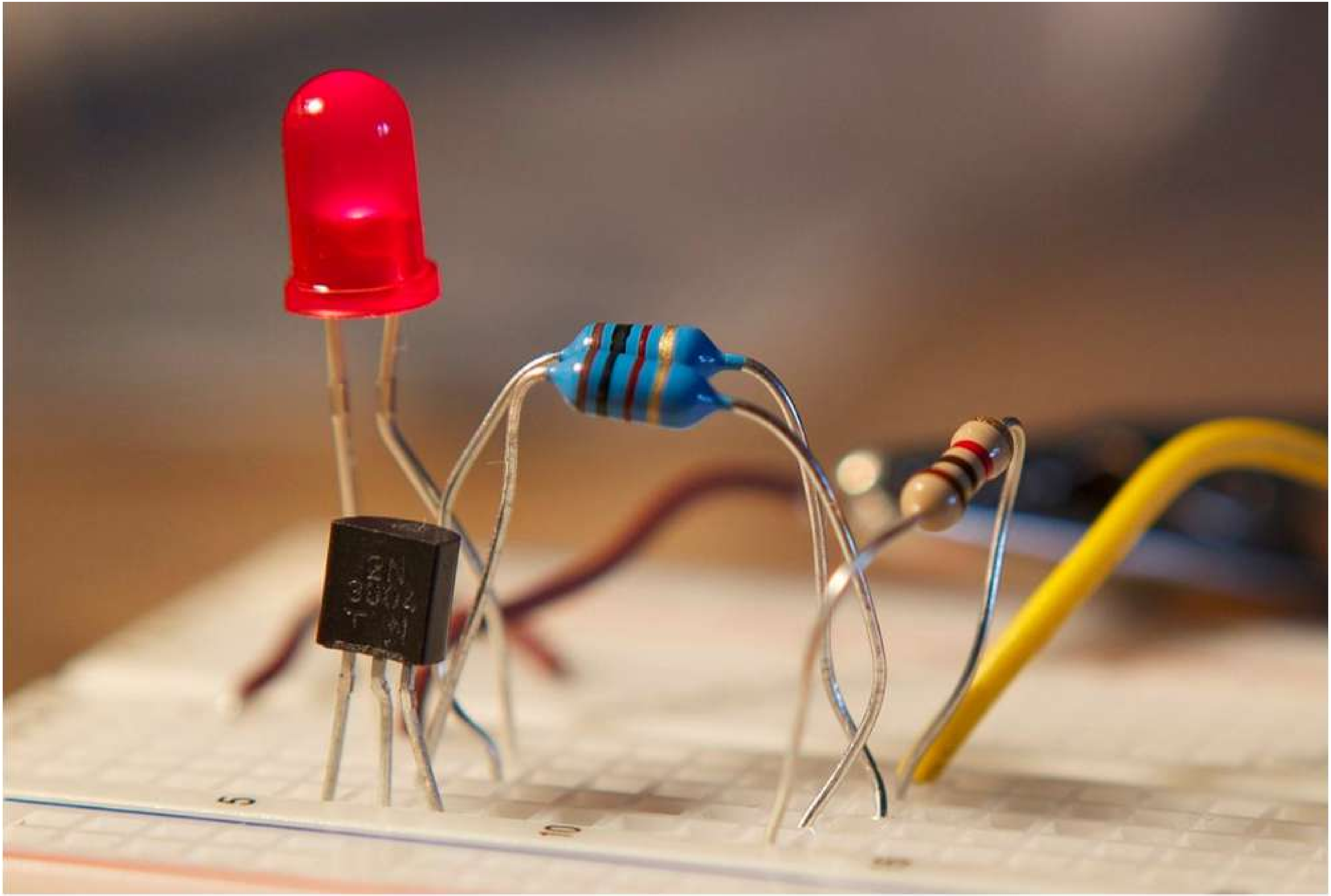
The next step is to join the two coils or windings of the toroid. You may have noticed the two dots next to the toroid windings in the circuit diagram. These two dots indicate the polarity of the transformer and as you can see the two windings are opposite to each other. To make sure that the polarity of our toroid windings are correct we must do the following:

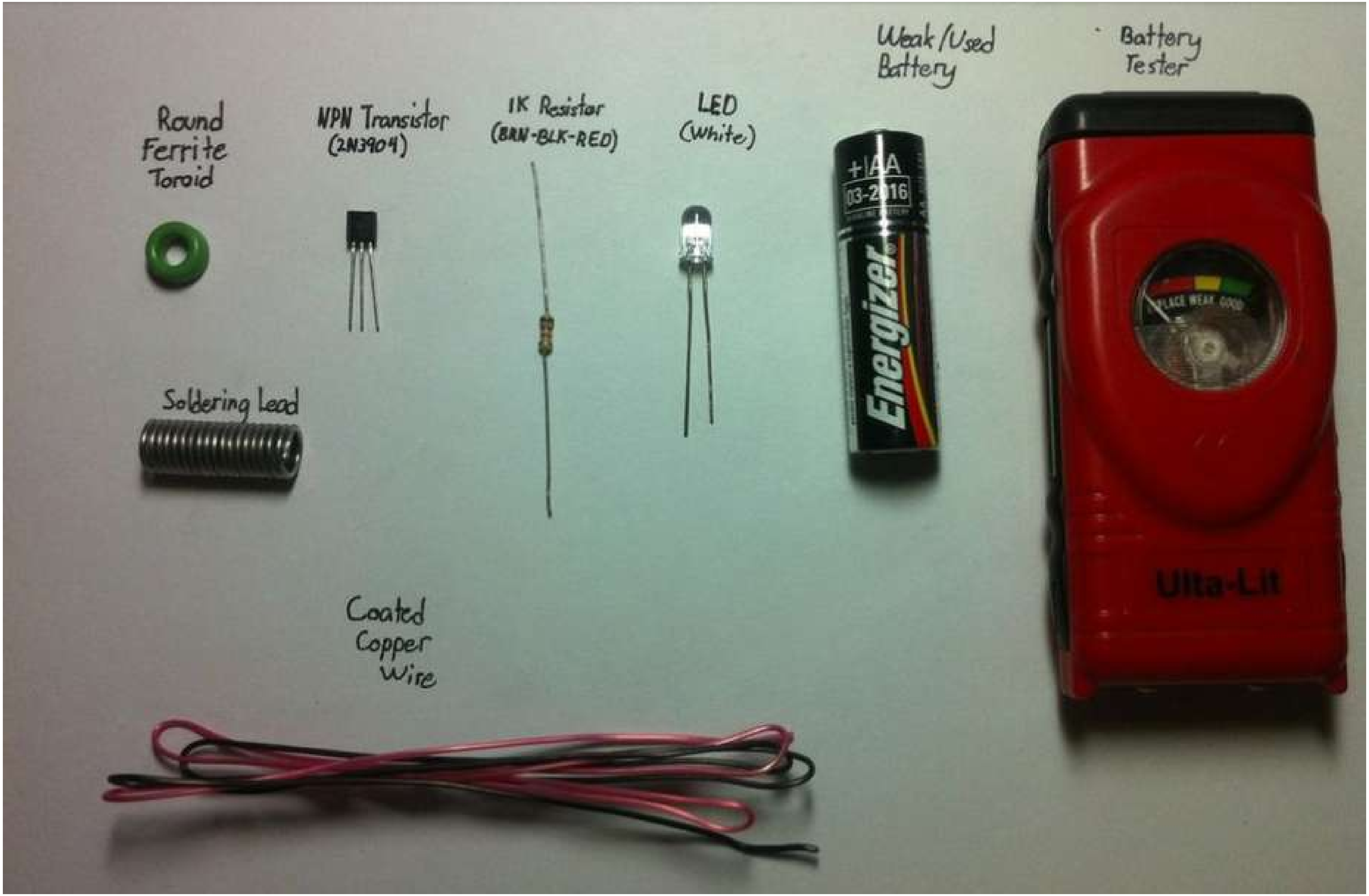
- If we look at the toroid we noticed that we have two wires of different colours sticking out at both ends of the toroid.
- Take one wire of a specific colour (green in the example) on the one side of the toroid and one wire of the other colour (white in the example) on the other side of the toroid and connect (or solder) them together. These two wires forms the top pole of the toroid as in the circuit diagram and is connected to the positive terminal of the battery.

A conventional joule thief, shows components and how they are connected. This example uses a red LED. A ferrite toroid is wound to form a coil with primary (white) and feedback (green) windings. A 2N2222A transistor and 1000 ohm resistor are used.

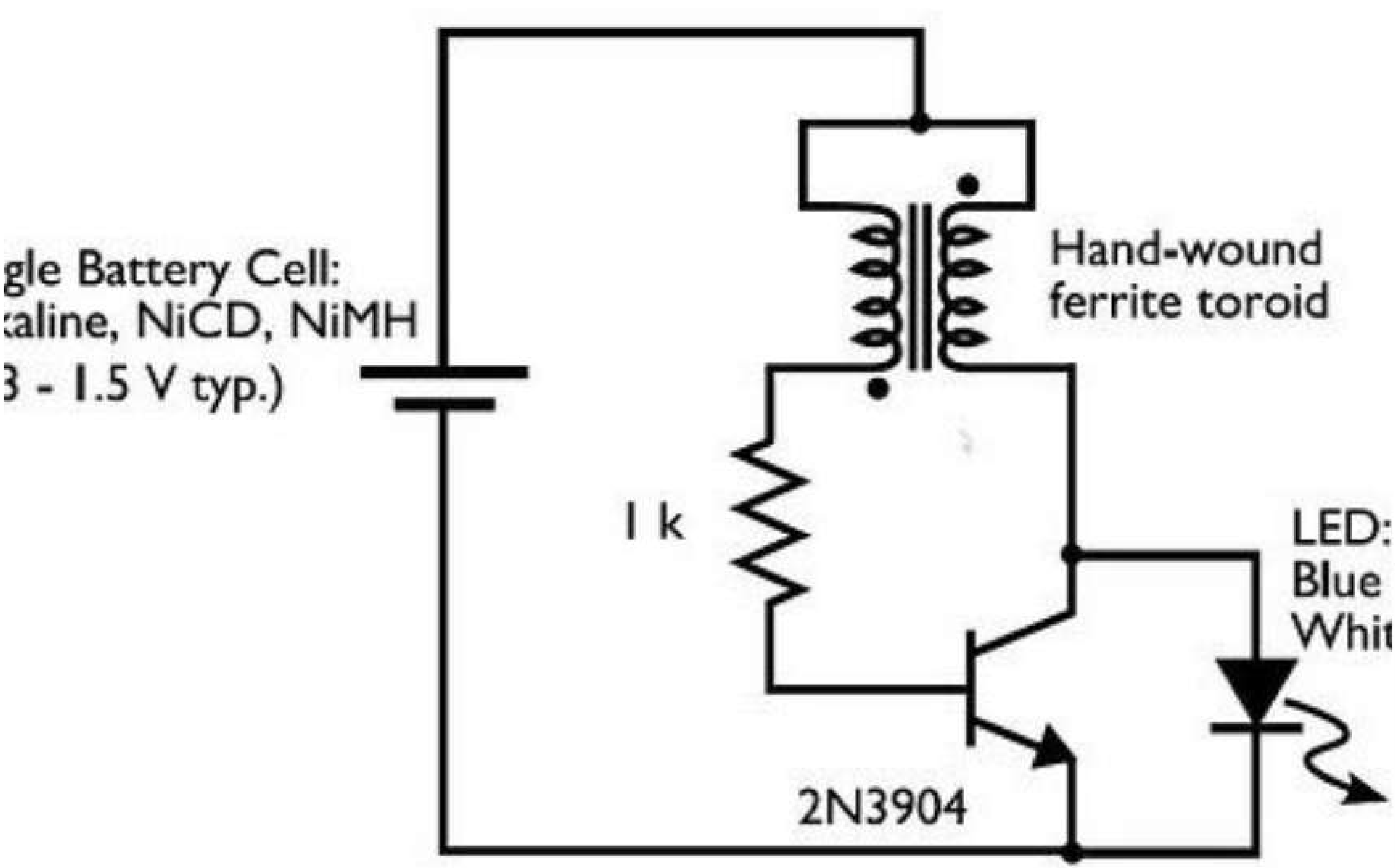


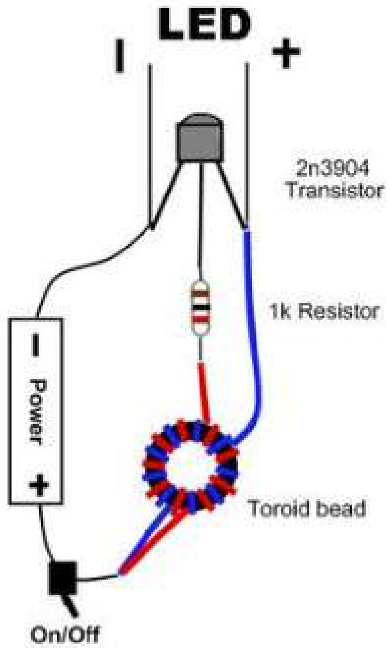
A joule thief with two axial inductors replacing the ferrite toroid, shown on a solderless breadboard

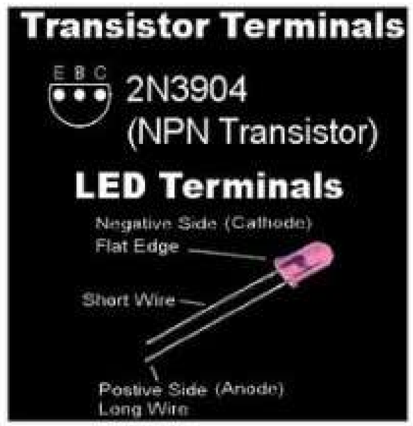

2N

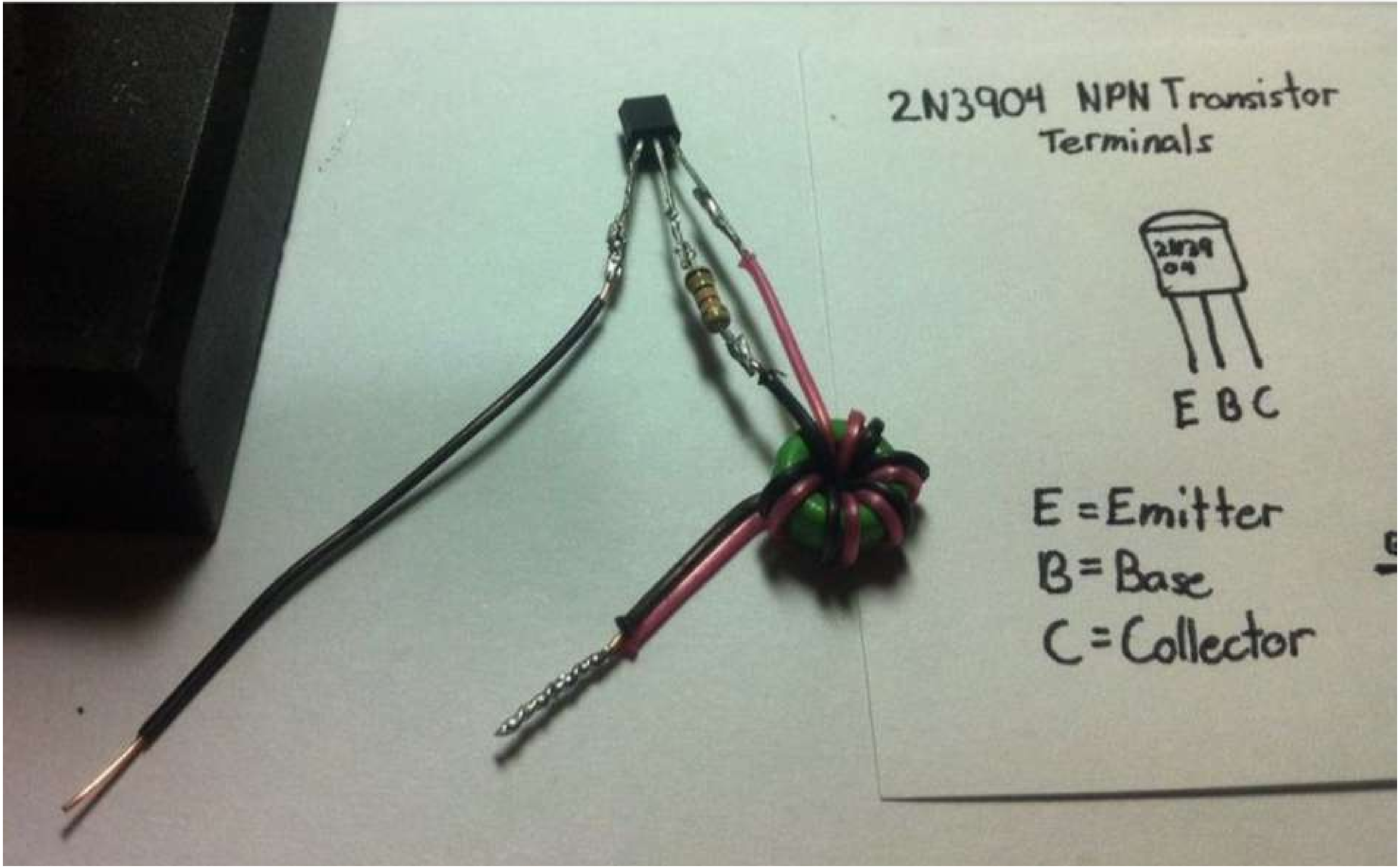

Round Ferrite Toroid
NPN Transistor (2N3904)
1K Resistor (BRN-BLK-RED)
LED (White)
Weak/Used Battery
Battery Tester
Soldering Lead
Coated Copper Wire
+AA
03-2016
Energizer
REPLACE WEAK GOOD
Ulta-Lit

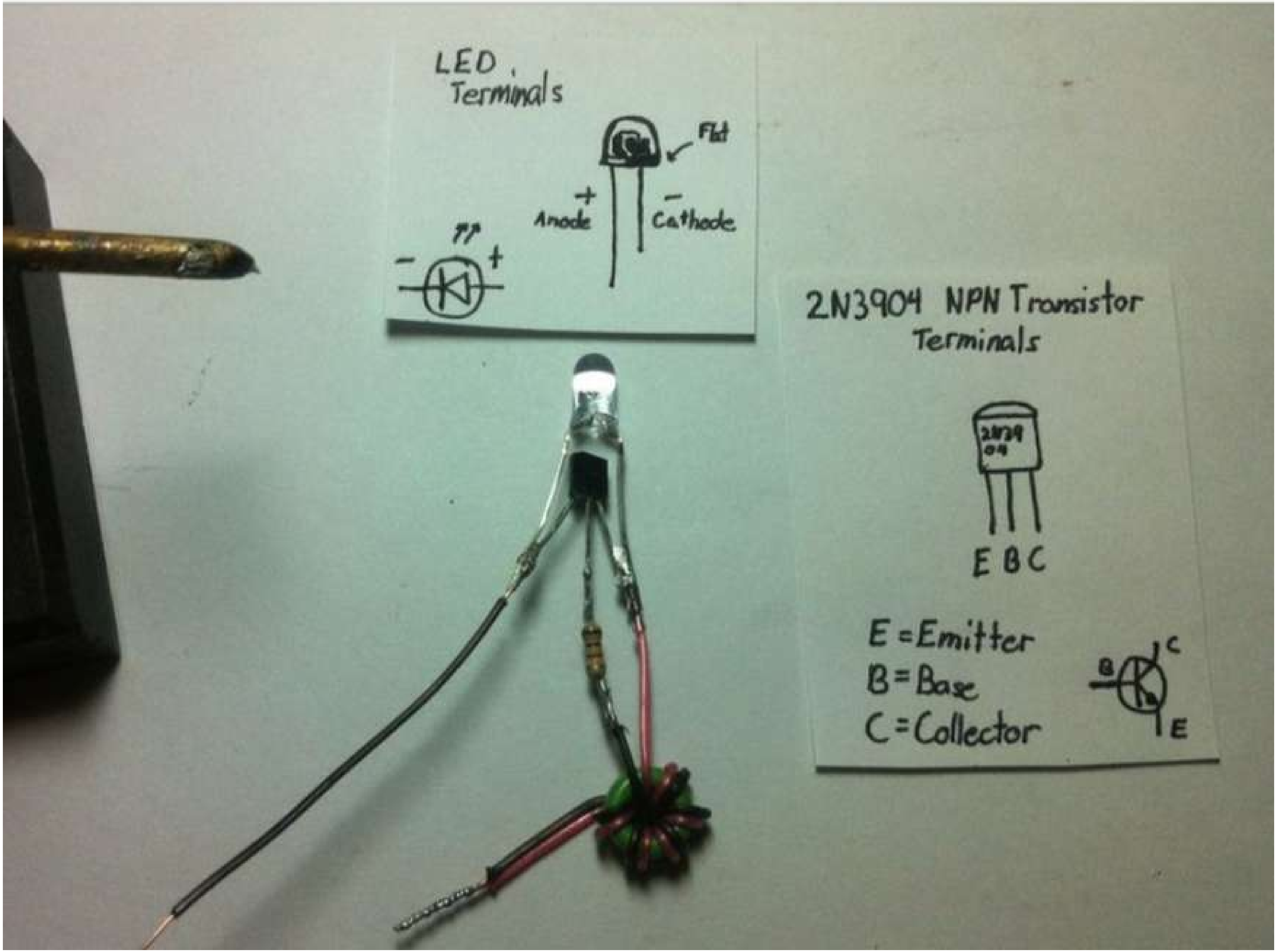
Step 2: Schematic Diagrams





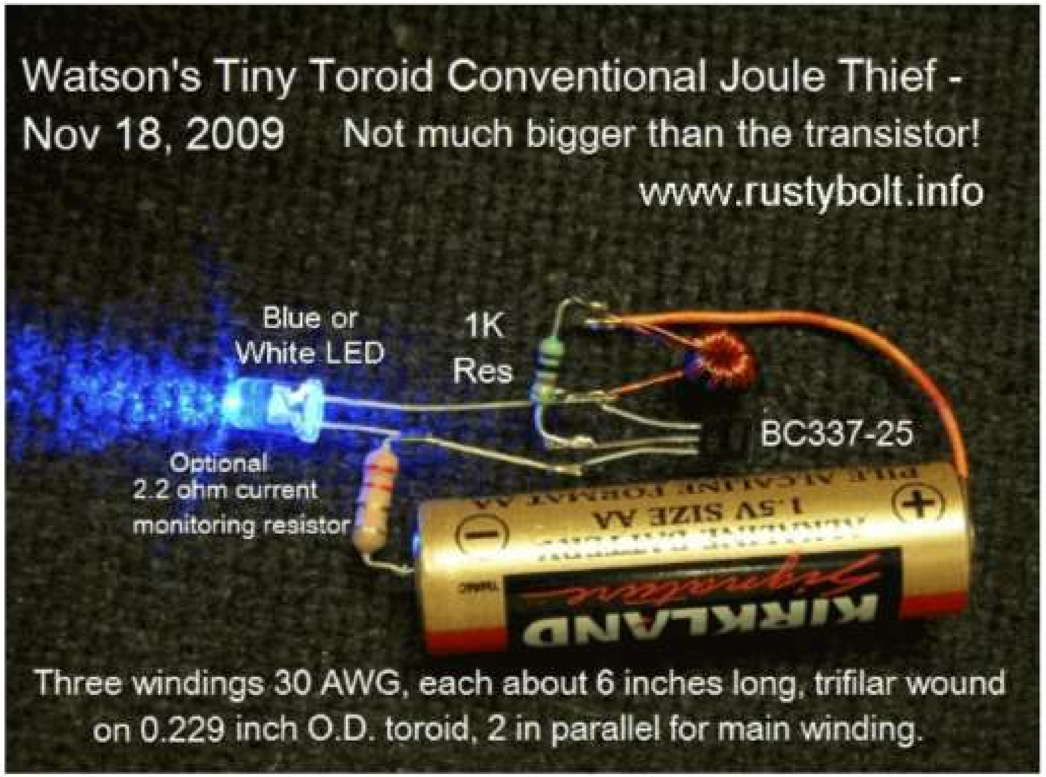



2N3904 NPN Transistor
Terminals
2N39
04
E B C
E = Emitter
B = Base
C = Collector

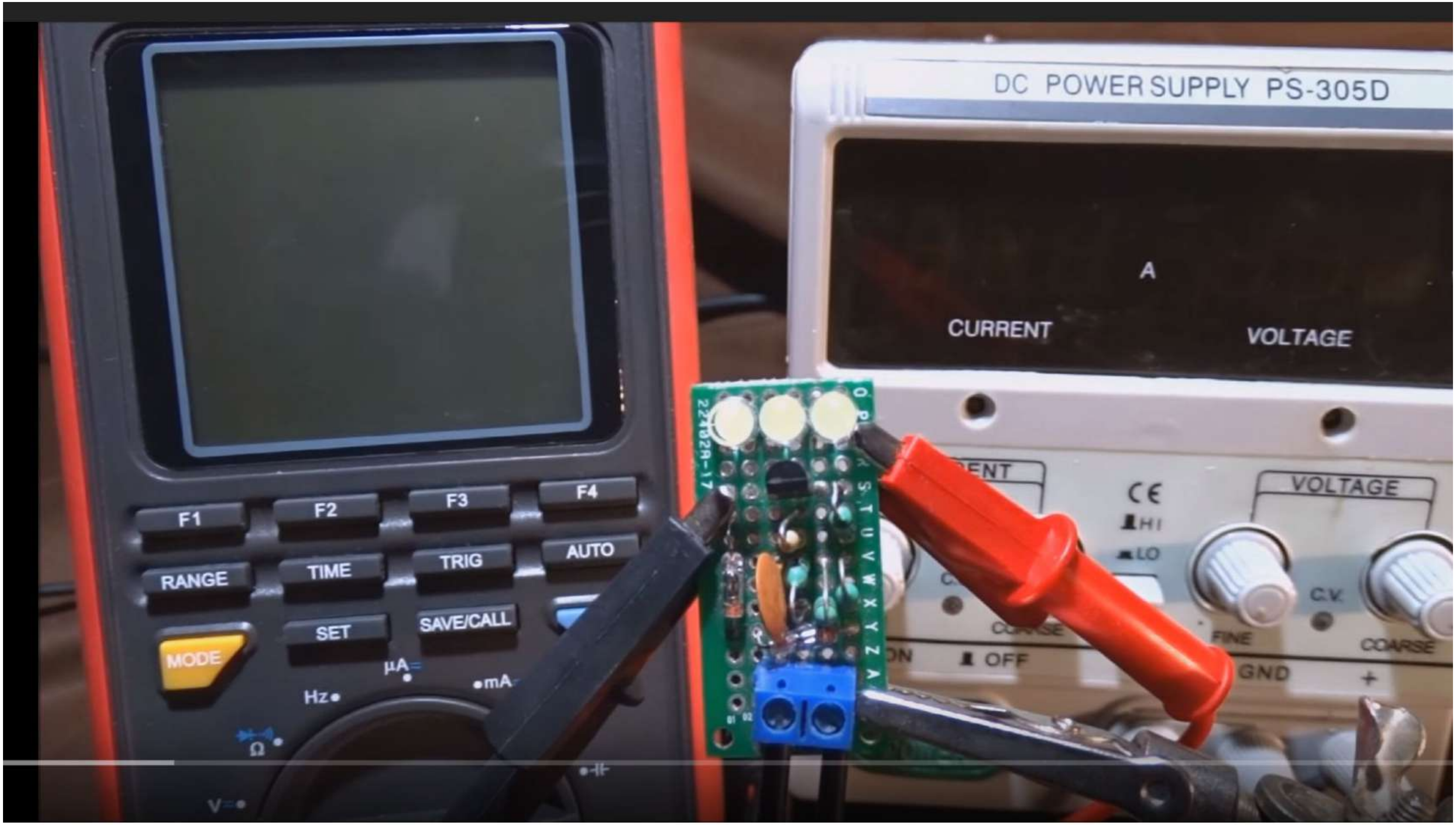


LED
Terminals
Flat
+
Anode
−
Cathode
−
+
2N3904 NPN Transistor
Terminals
2N39
04
E B C
E = Emitter
B = Base
C = Collector
B
C
E

These tiny T231212T toroids from Surplussales.com are high permeability so it doesn't take much wire to make a good Joule Thief coil. The core is less than a quarter inch diameter (here is a data sheet in .PDF.). Six inches of 30 AWG magnet wire trifilar wound, with two of the windings connected in parallel for the primary winding.

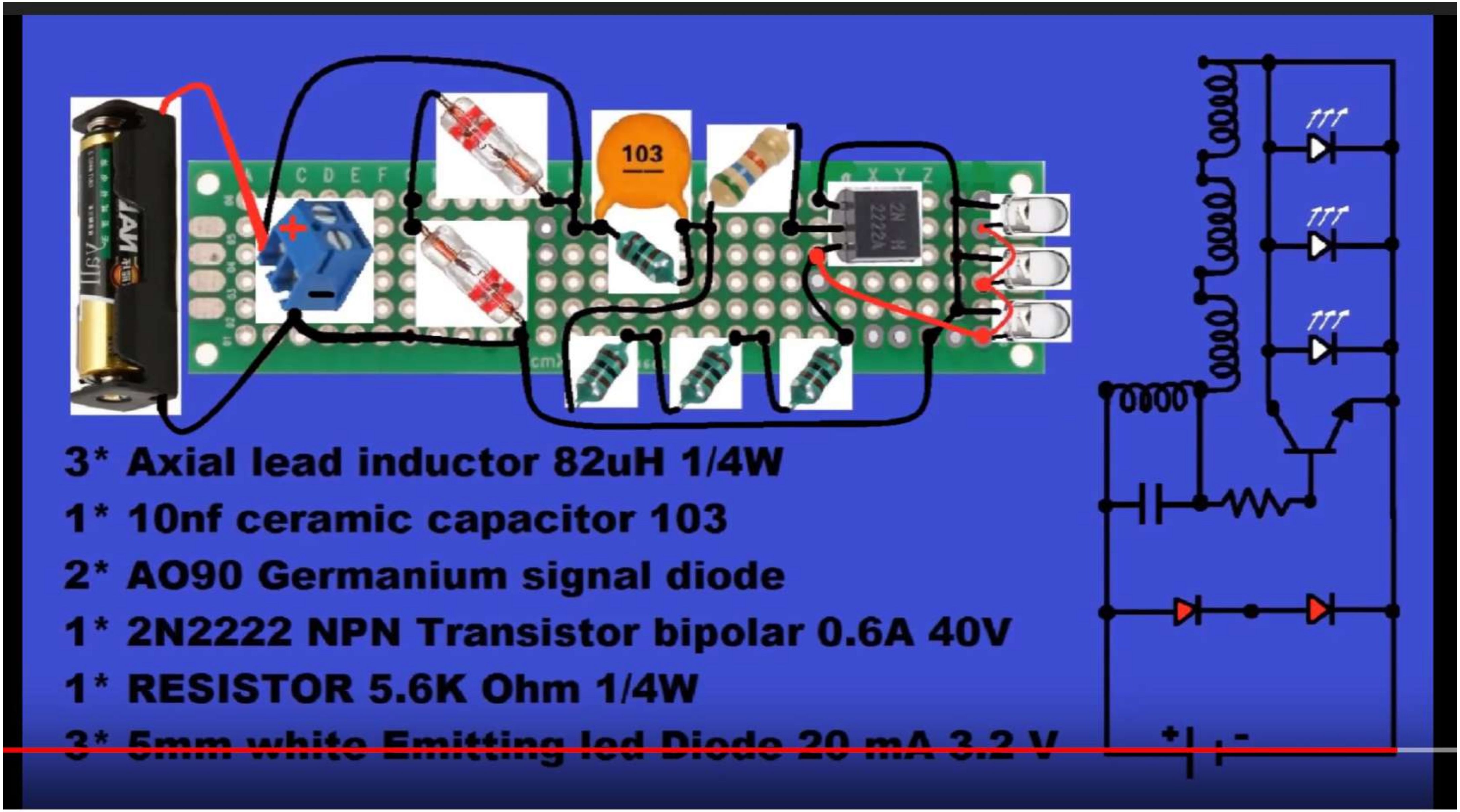


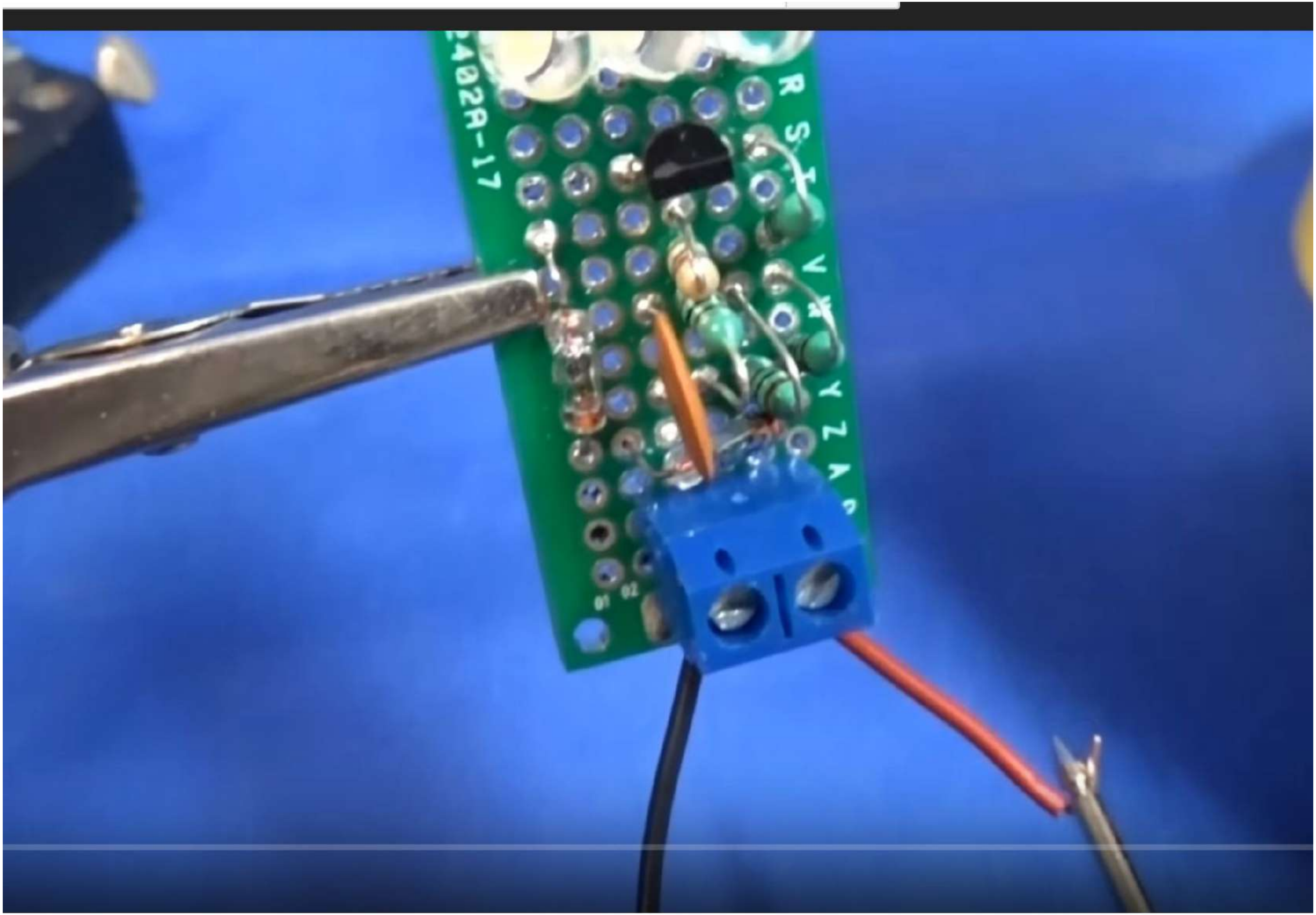
The transistor is a BC337-25. I put a 2.2 ohm resistor in series with the circuit to measure the battery current. It can be put there temporarily and removed when the LED current is what you want. How do you change the LED current? Change the 1k resistor to a different value. Higher values will reduce the LED current. With the BC337-25 and 1k resistor, the LED current should be close to 20 milliamps so it's probably not wise to go much below 1k. If you use another transistor, especially the pipsqueak 2N3904, you may have a hard time getting it to put out 20 milliamps.

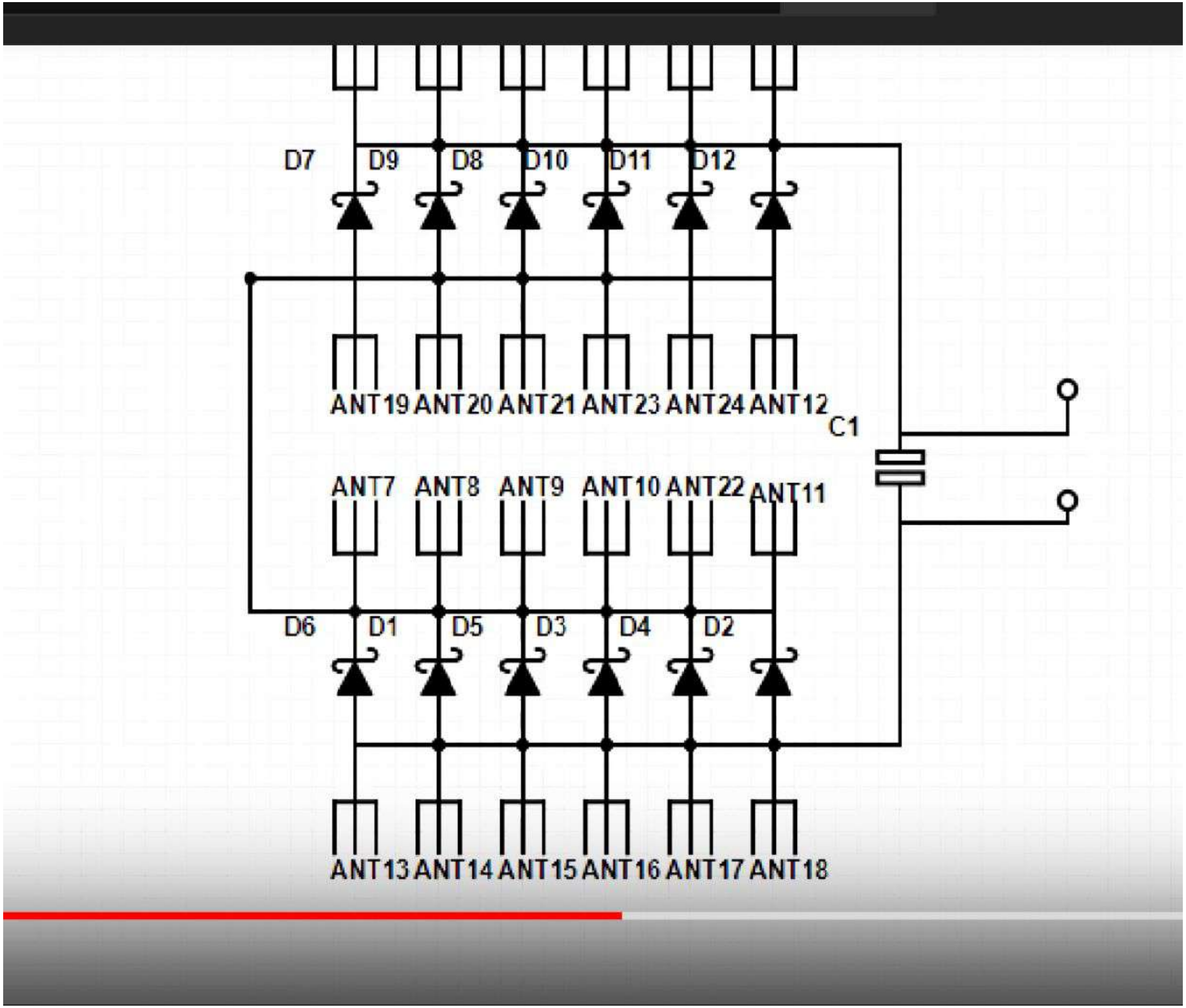


DC POWER SUPPLY PS-305D
CURRENT
VOLTAGE
F1
F2
F3
F4
RANGE
TIME
TRIG
AUTO
SET
SAVE/CALL
MODE
VOLTAGE
FINE
COARSE
GND
OFF


B
103M


103
2N 2222A
3* Axial lead inductor 82uH 1/4W
1* 10nf ceramic capacitor 103
2* AO90 Germanium signal diode
1* 2N2222 NPN Transistor bipolar 0.6A 40V
1* RESISTOR 5.6K Ohm 1/4W
3* 5mm white Emitting led Diode 20 mA 3.2 V


R
S
V
Y
Z
A


D7
D9
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D10
D11
D12
ANT19
ANT20
ANT21
ANT23
ANT24
ANT12
C1
ANT7
ANT8
ANT9
ANT10
ANT22
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D6
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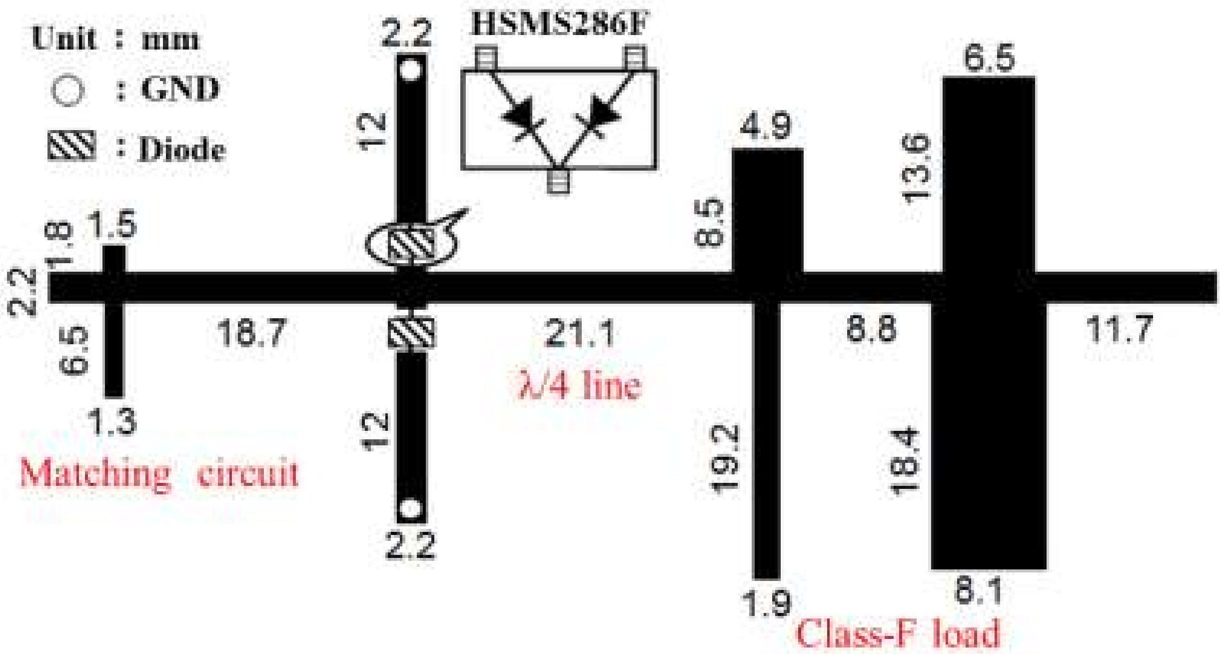
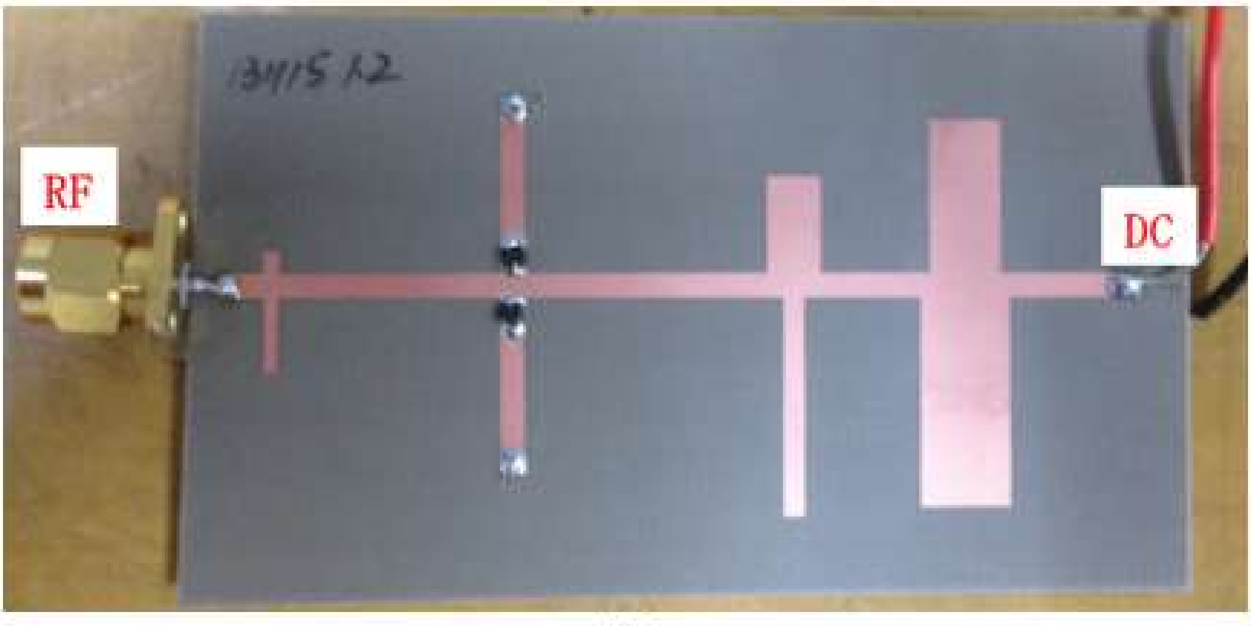
D3
D4
D2
ANT13
ANT14
ANT15
ANT16
ANT17
ANT18



(a)



(b)

Figure 4.1: Proposed positive output voltage rectifier. (a) Structure and size. (b) Photograph.

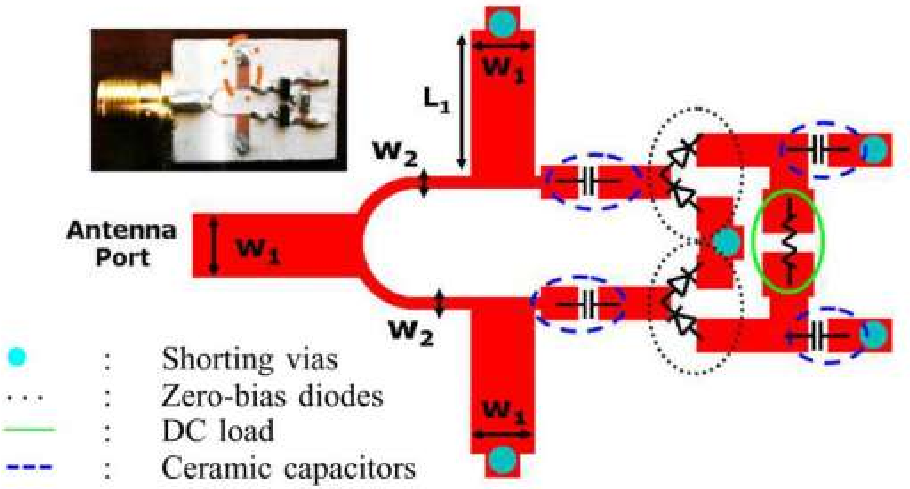
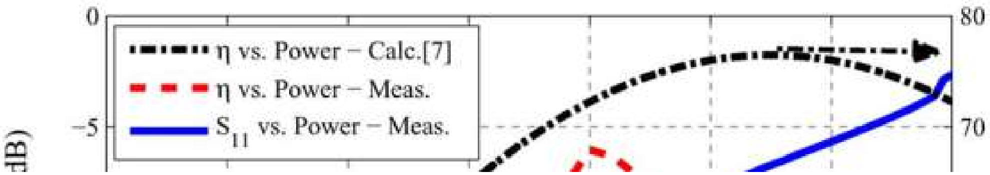


Fig. 3. Layout of the rectifier prototype, printed on RO3206. $w_1 = 72$ mil, $w_2 = 15$ mil, and $L_1 = 171$ mil. Fabricated sample is shown in top left, and the impedance matching stub is encircled.



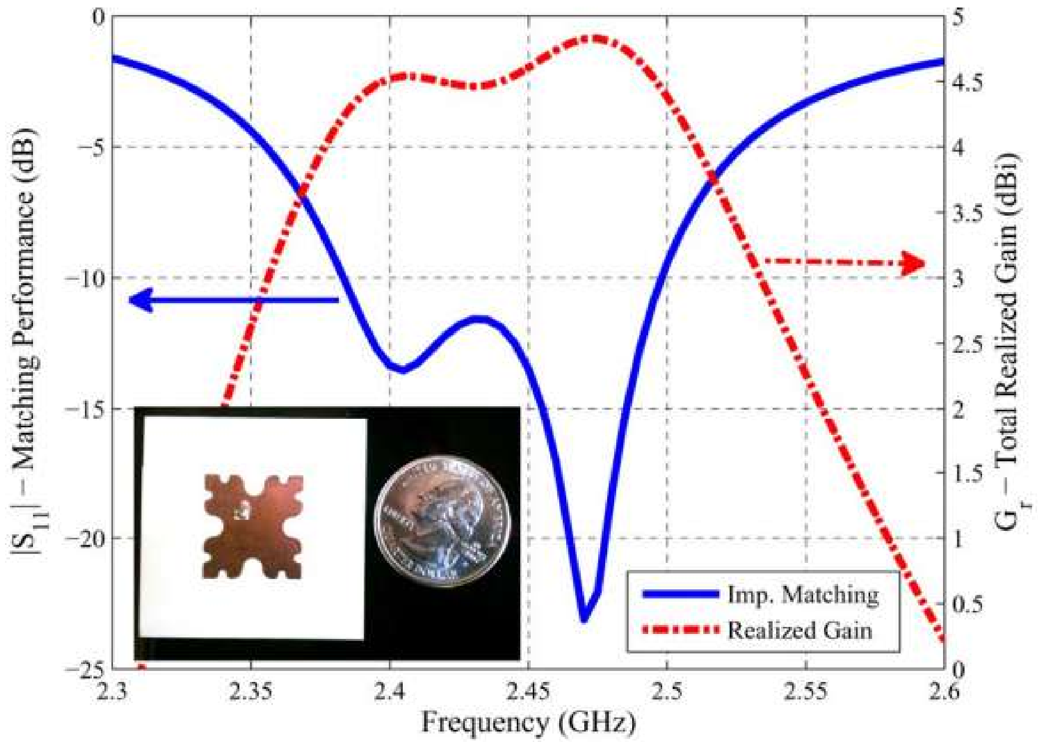
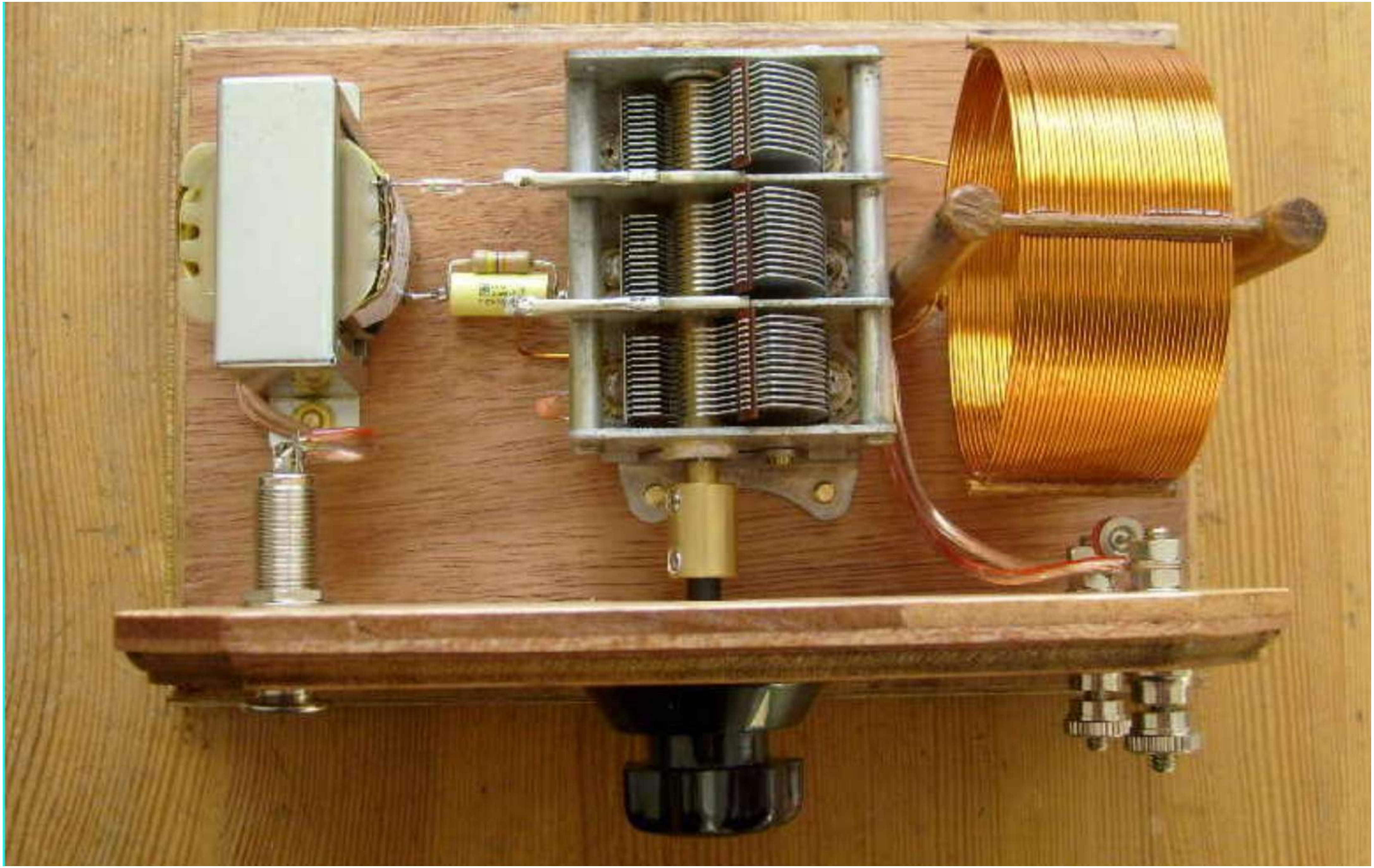
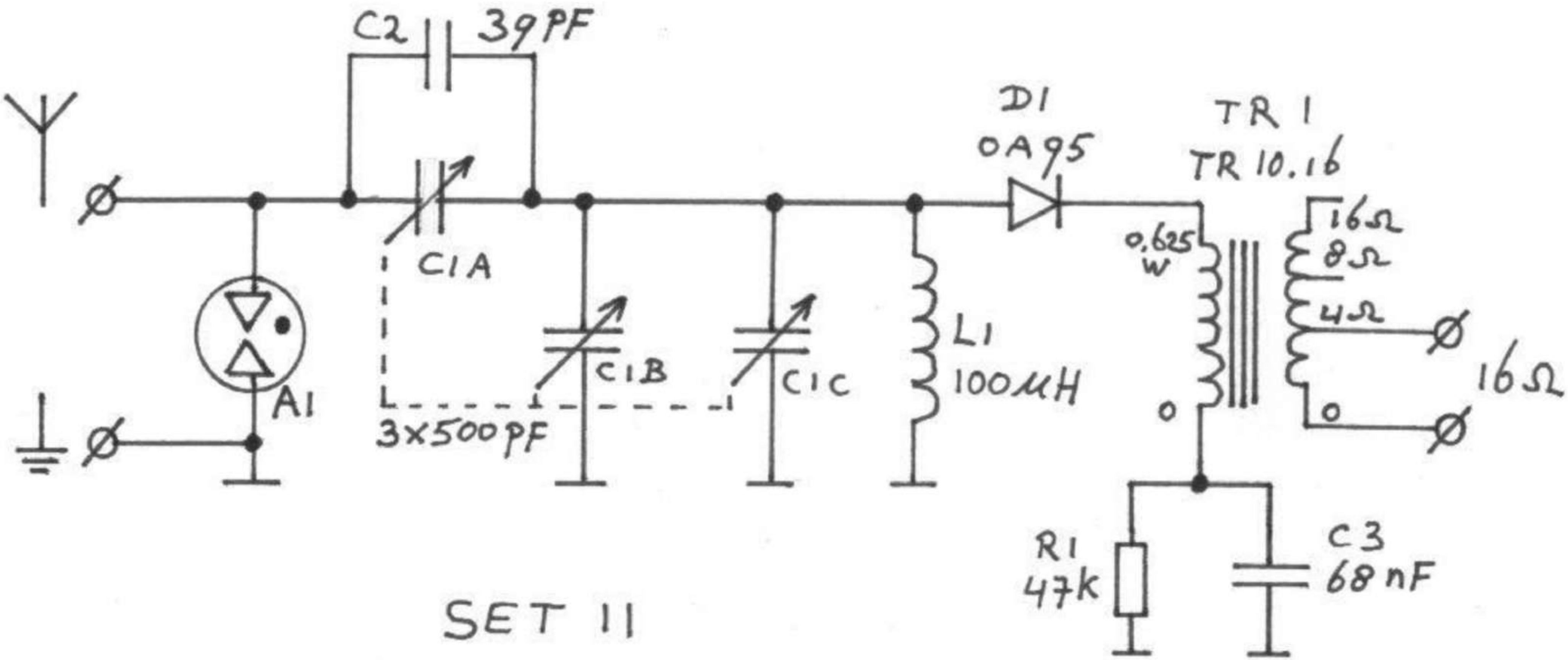
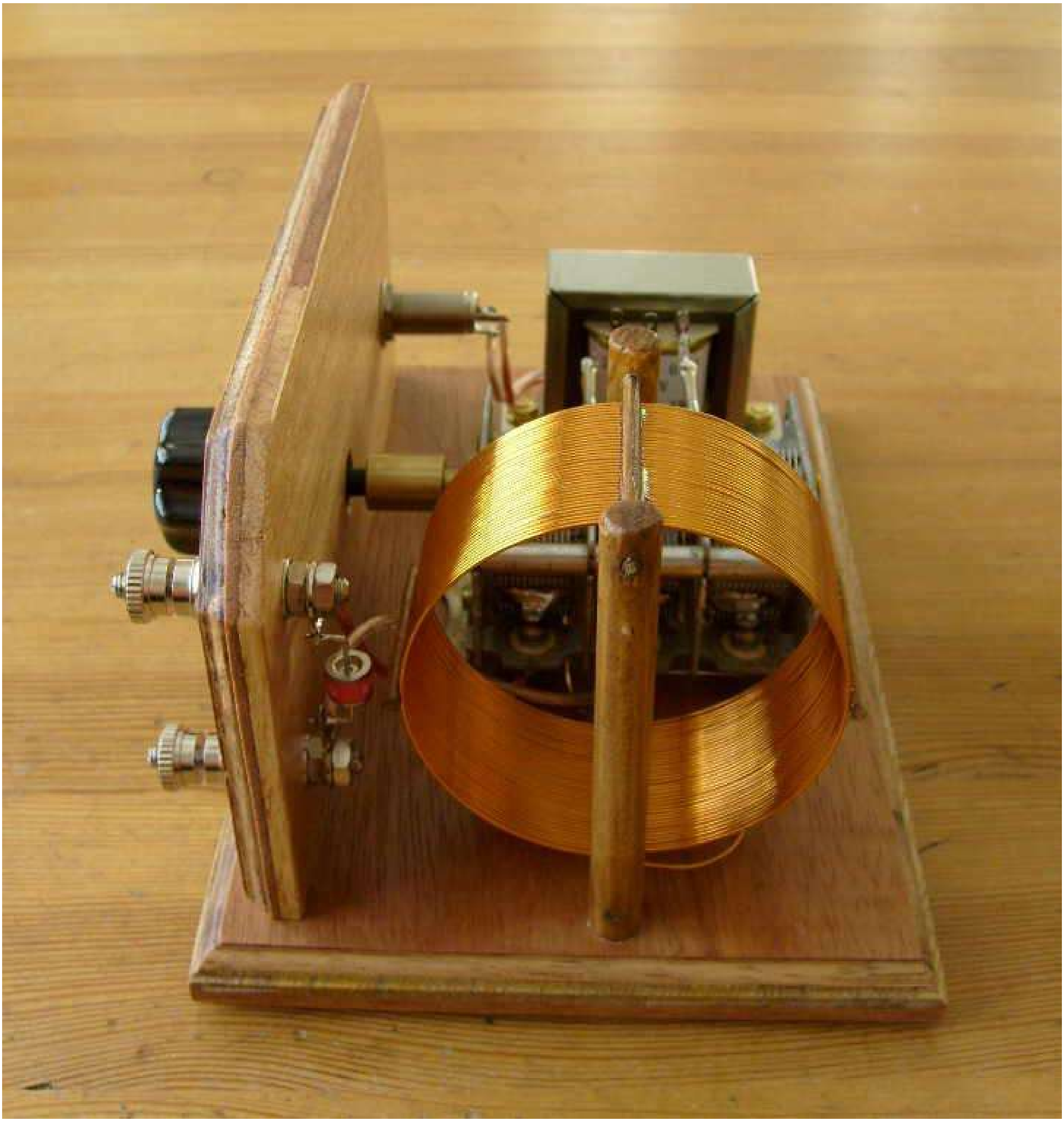
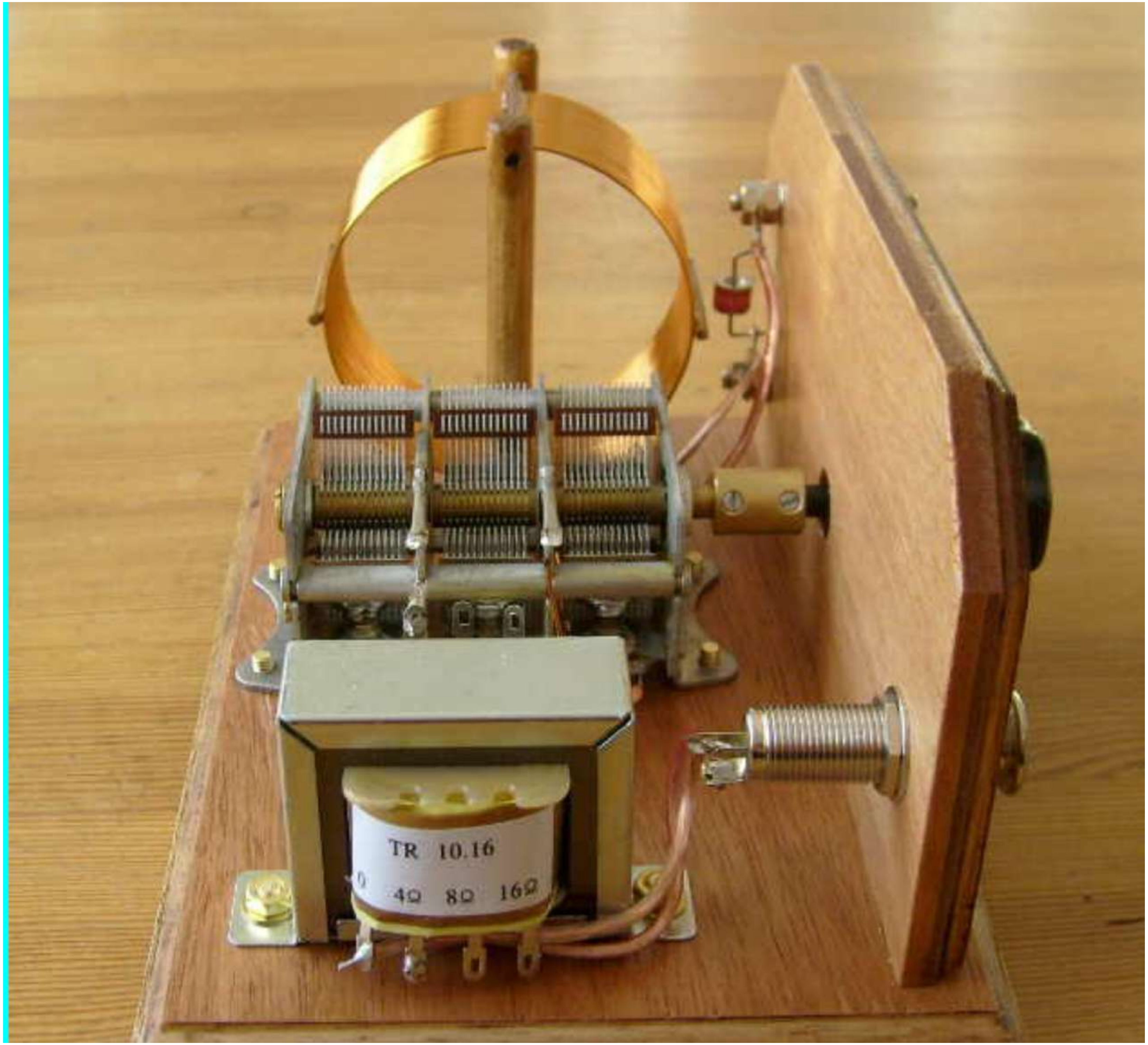


Fig. 5. Measured $|S_{11}|$ performance and total realized gain (at boresight) of the proposed antenna. Fabricated sample is shown in bottom left.

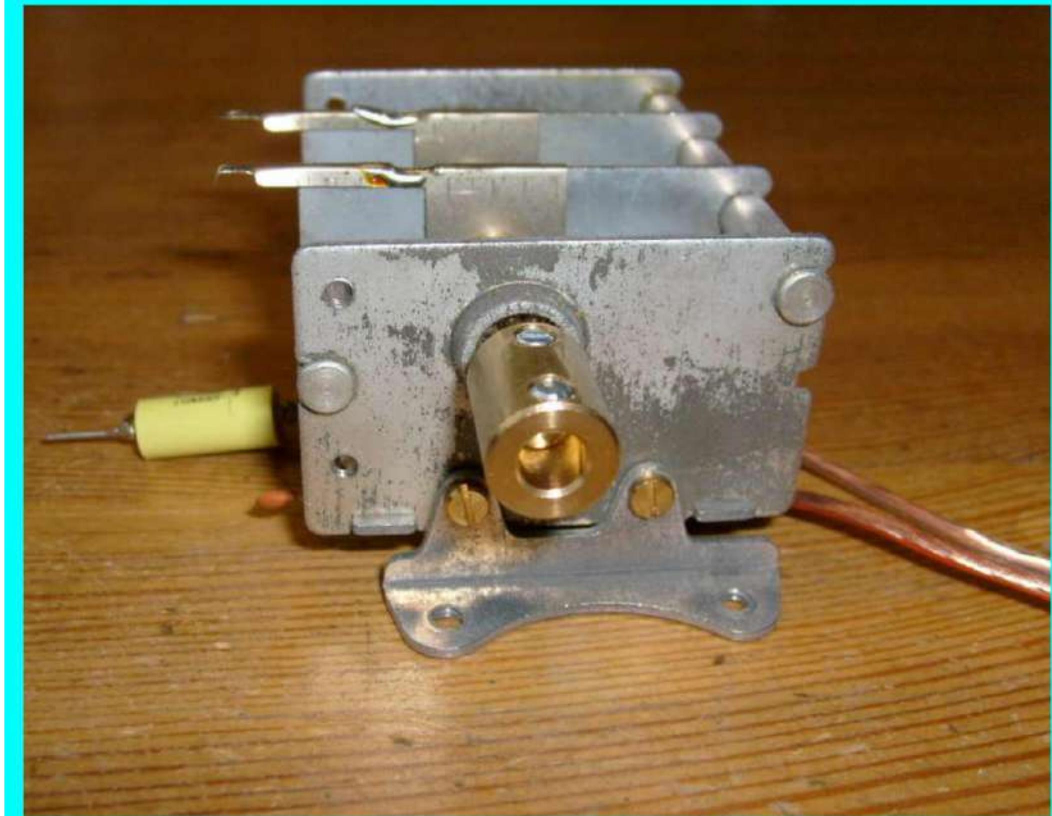


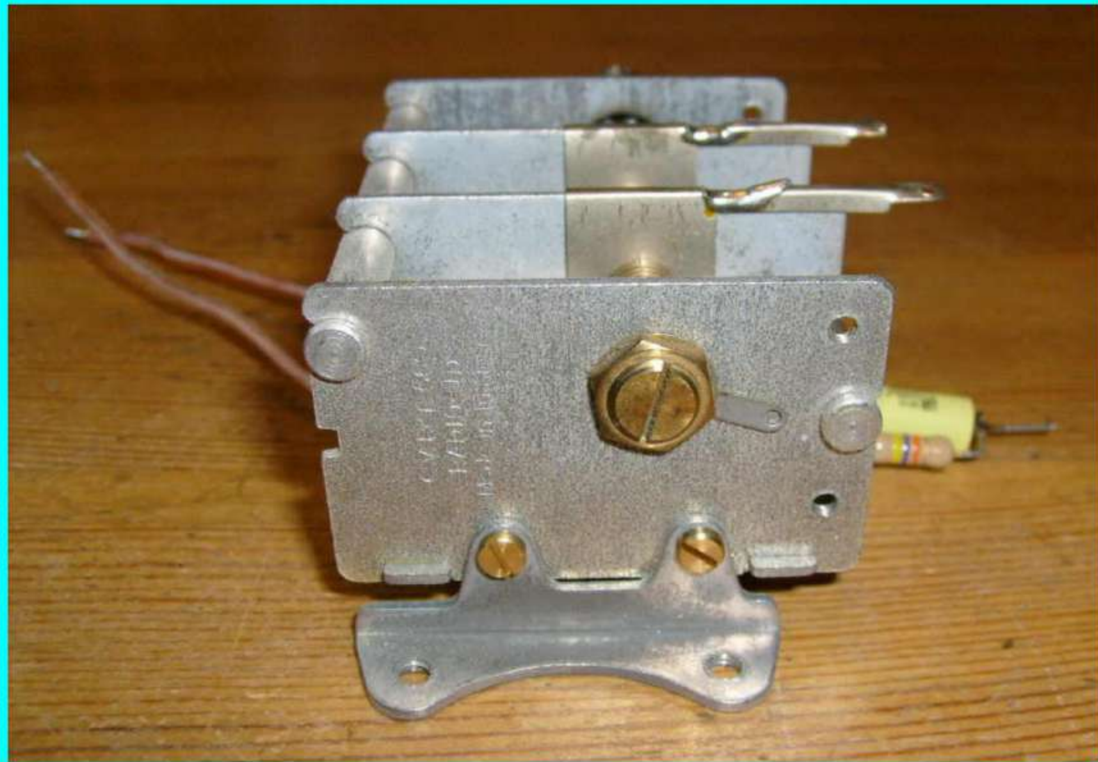

C2
39PF
D1
0A95
TR 1
TR 10.16
C1A
C1B
C1C
L1
100μH
0.625 W
16Ω
8Ω
4Ω
16Ω
A1
3×500PF
R1
47k
C3
68nF
SET 11



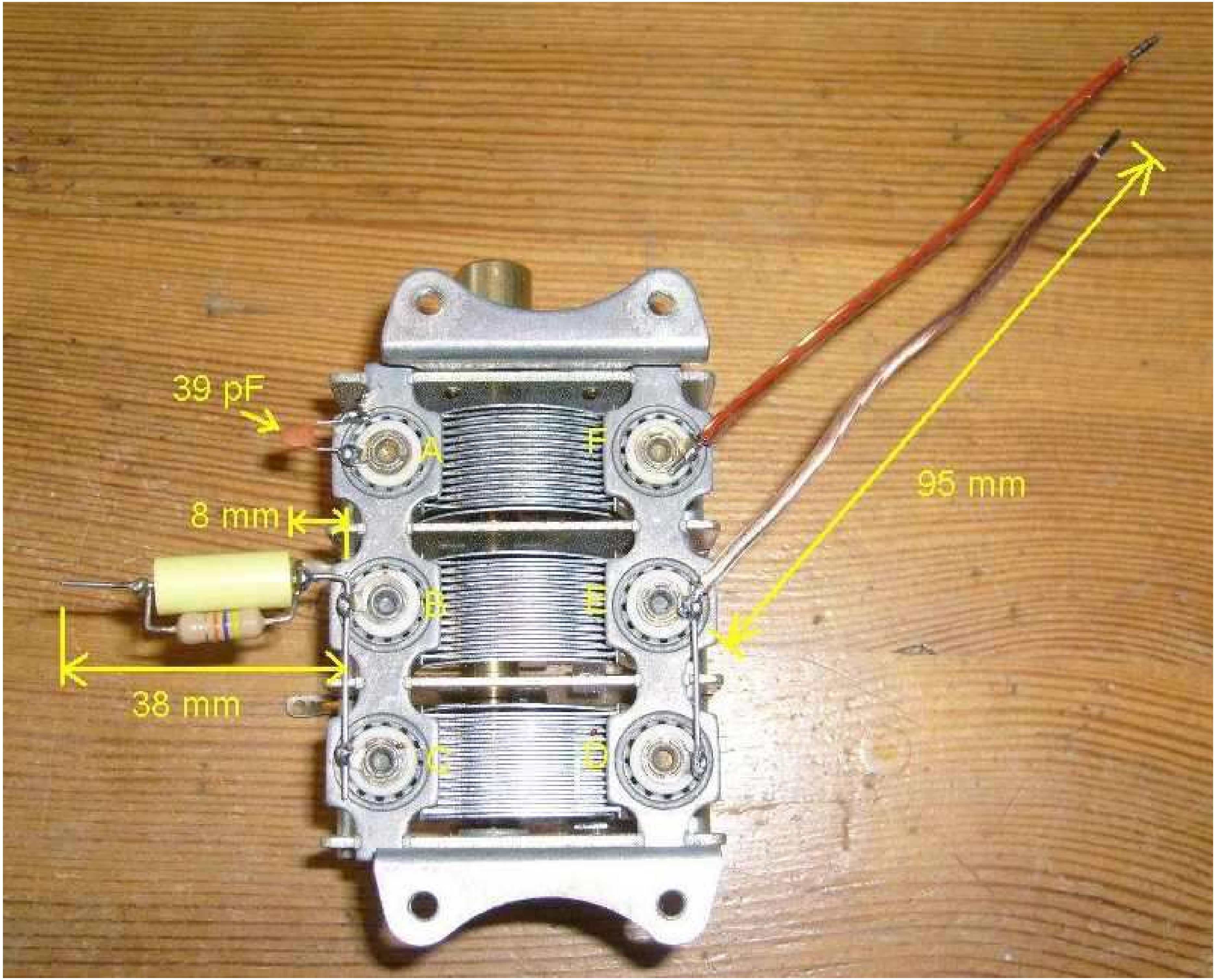

TR 10.16
0 4Ω 8Ω 16Ω

Preparation of the tuning capacitor

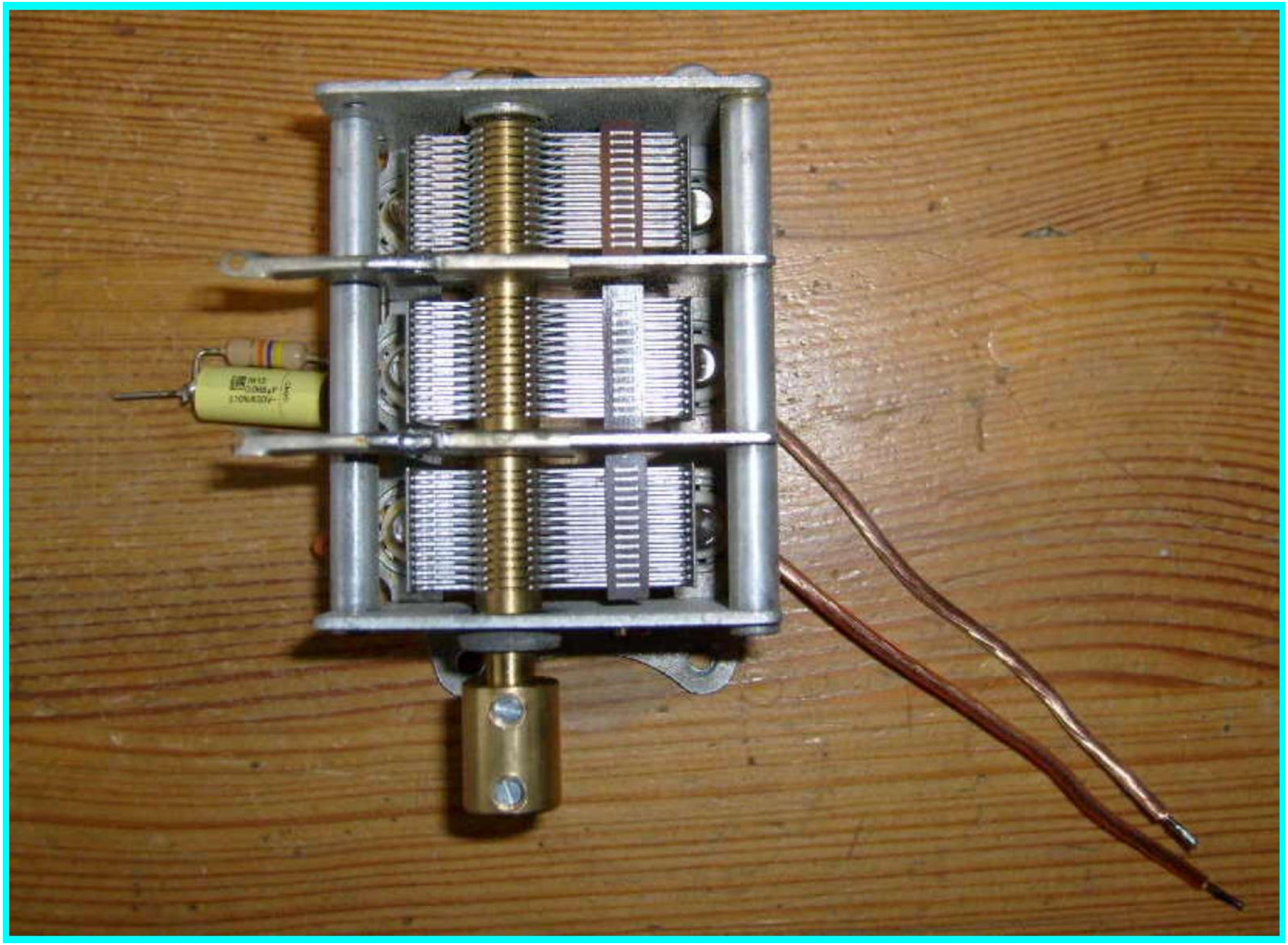


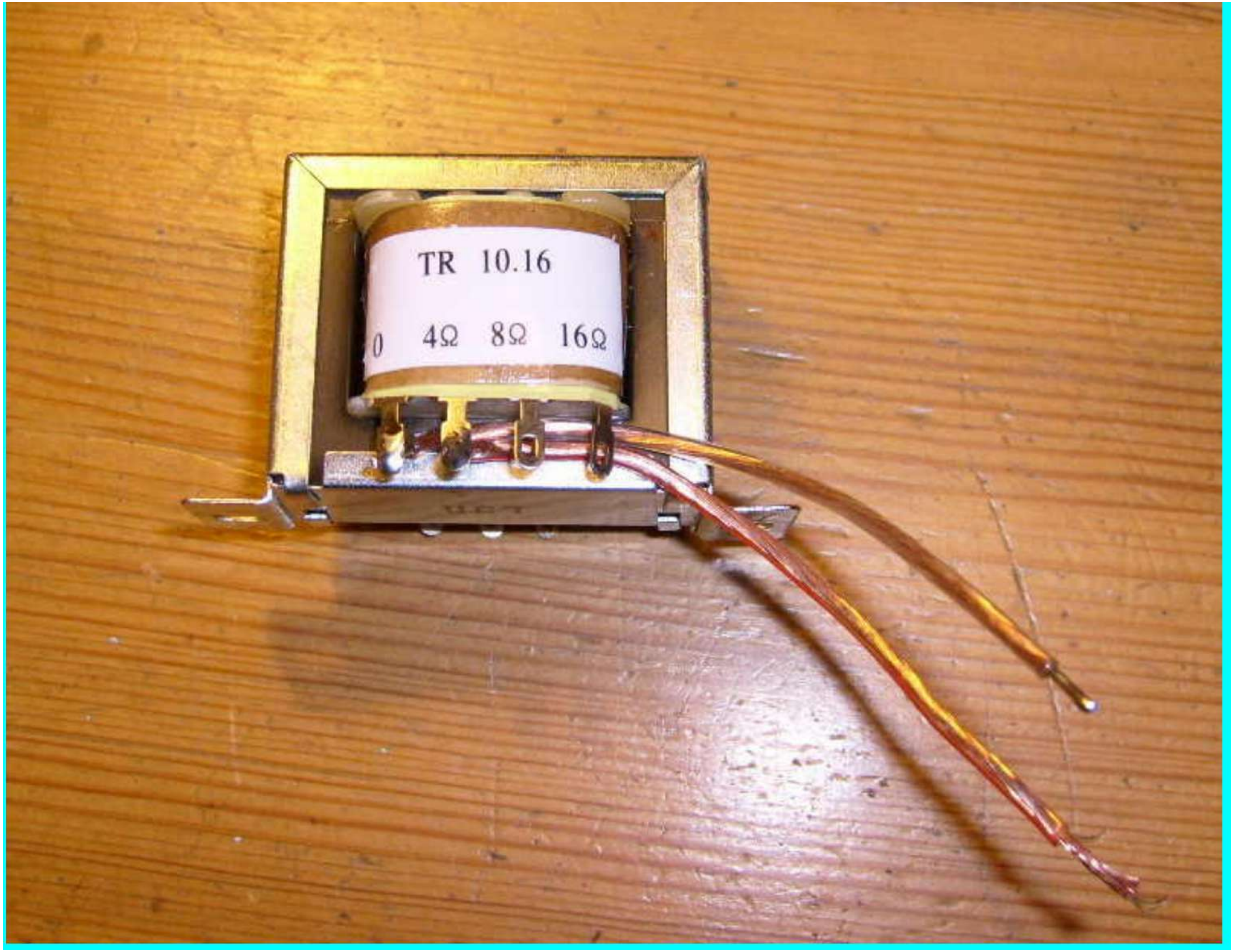


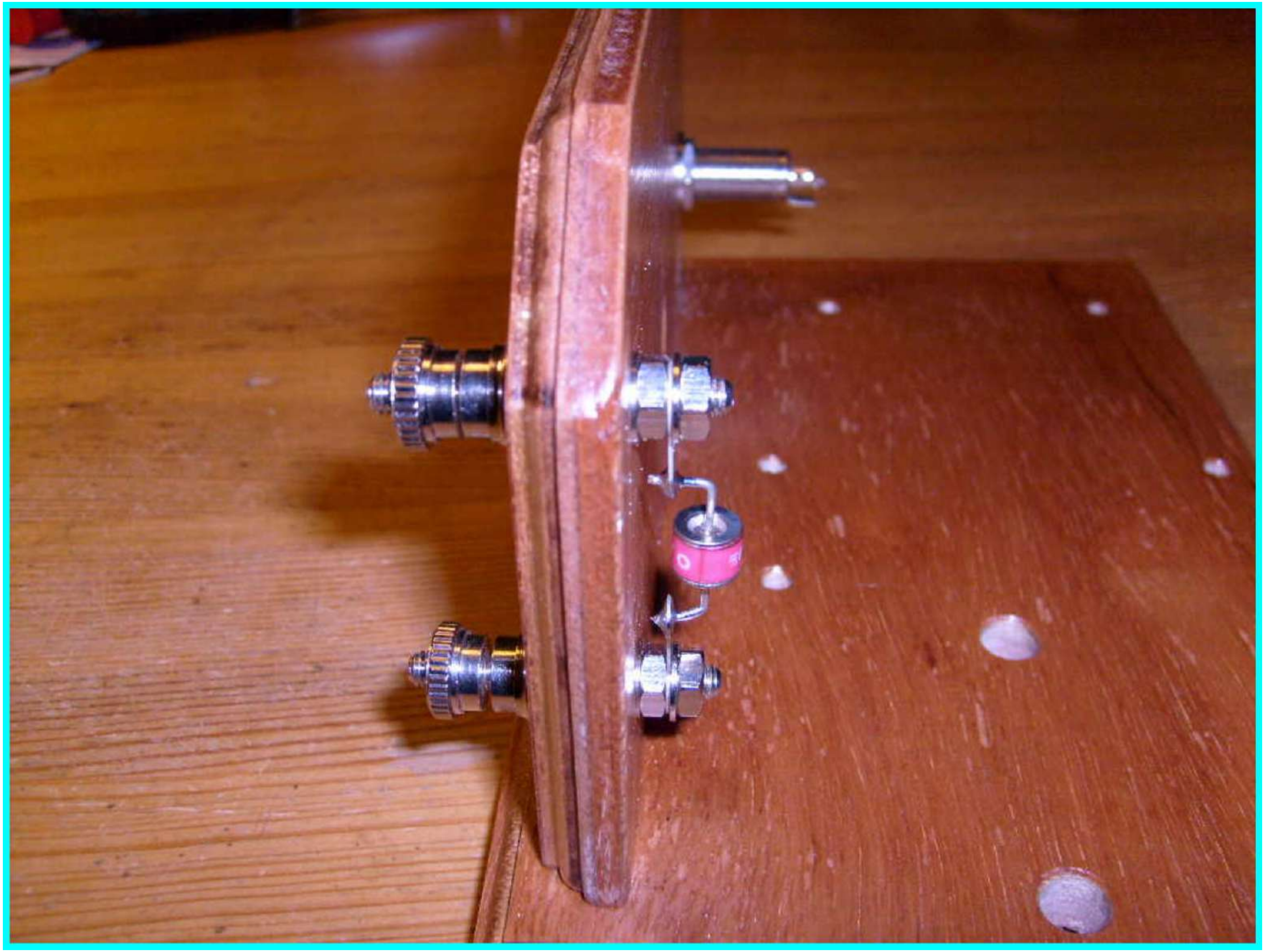
Mount the mounting supports on the tuning capacitor (they are delivered with the tuning capacitor).
Place the shaft coupler on the shaft of the tuning capacitor.



39 pF
A
F
95 mm
8 mm
B
E
38 mm
C
D

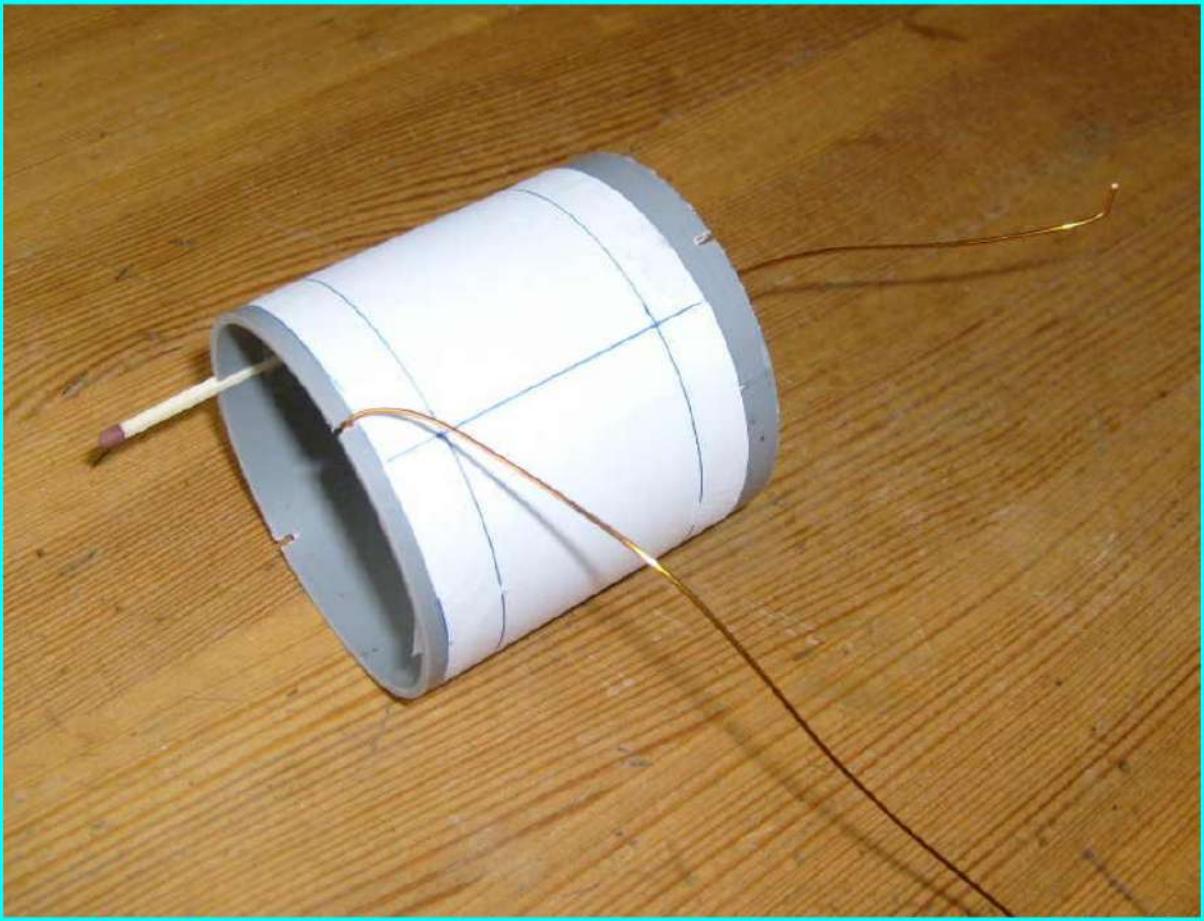



TR 10.16
0 4Ω 8Ω 16Ω

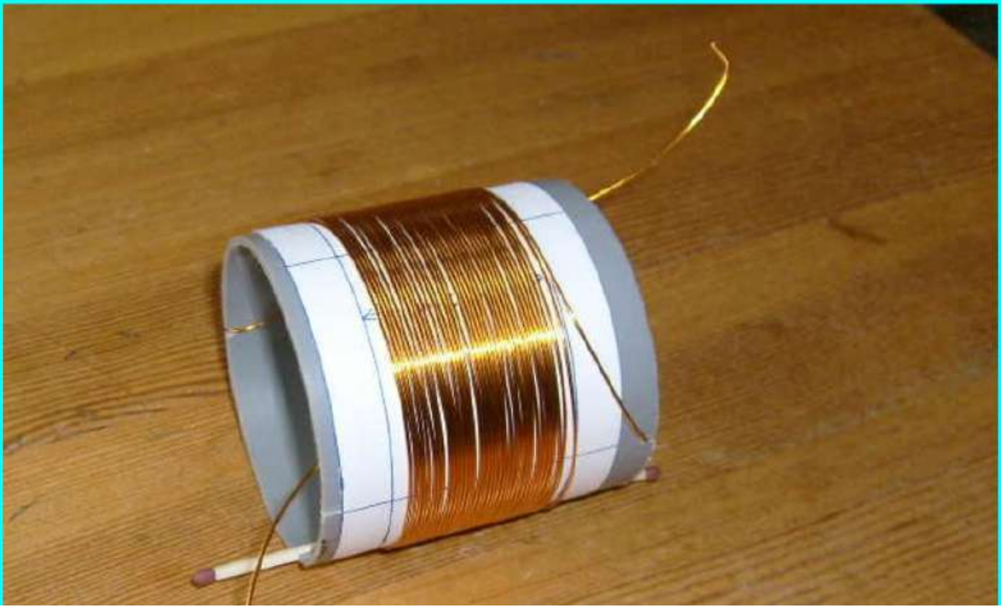


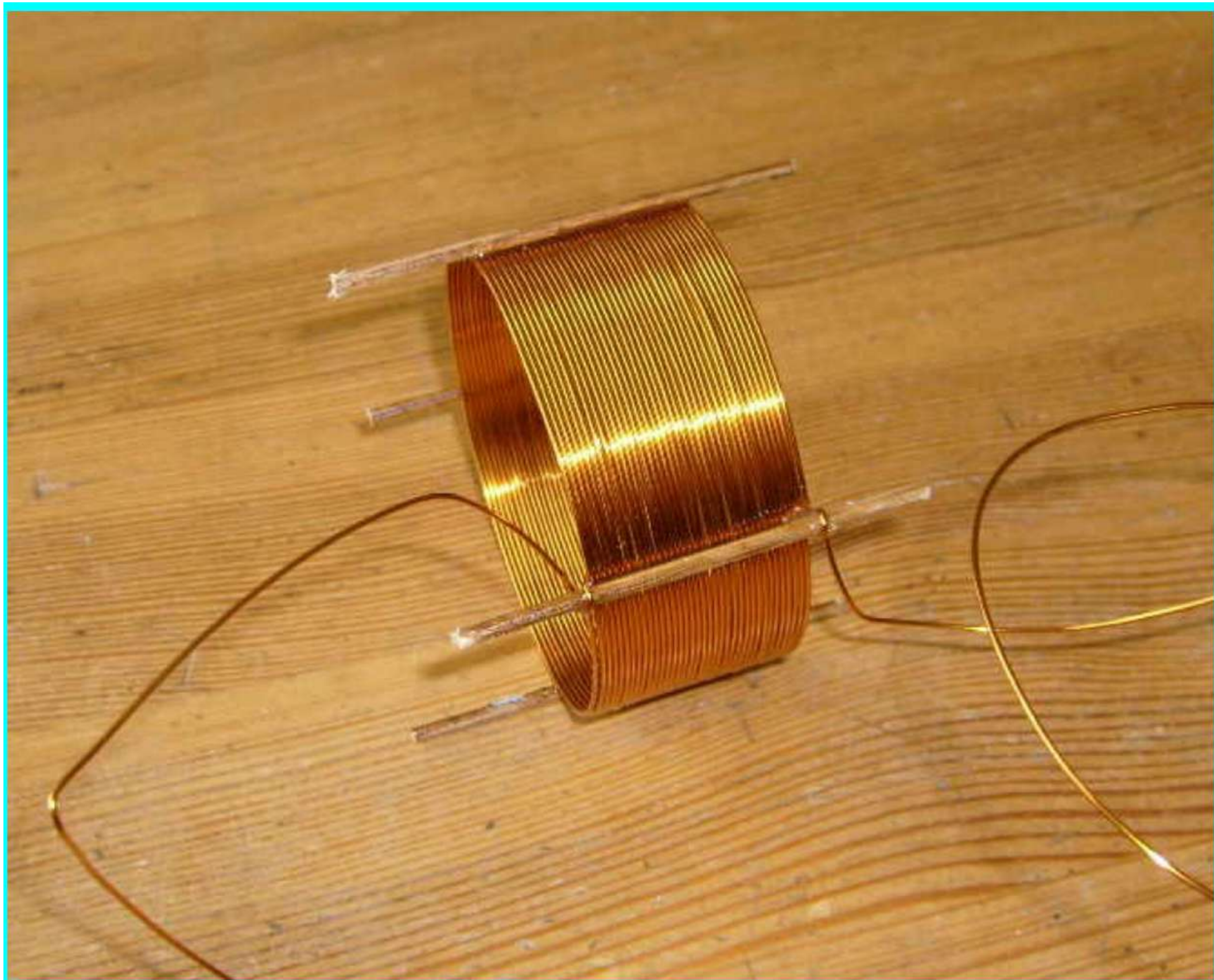
Screw the front on the bottom plate with four screws 3x45 mm.
Place the headphone socket.
Place the two terminal posts and the gas discharge tube.

Make a paper strip with 4 sections of 40x55 mm on it.
Do the strip around the tube, and fix it with a piece of tape.
Don't tape the strip onto the tube on places where later the coil is wound.

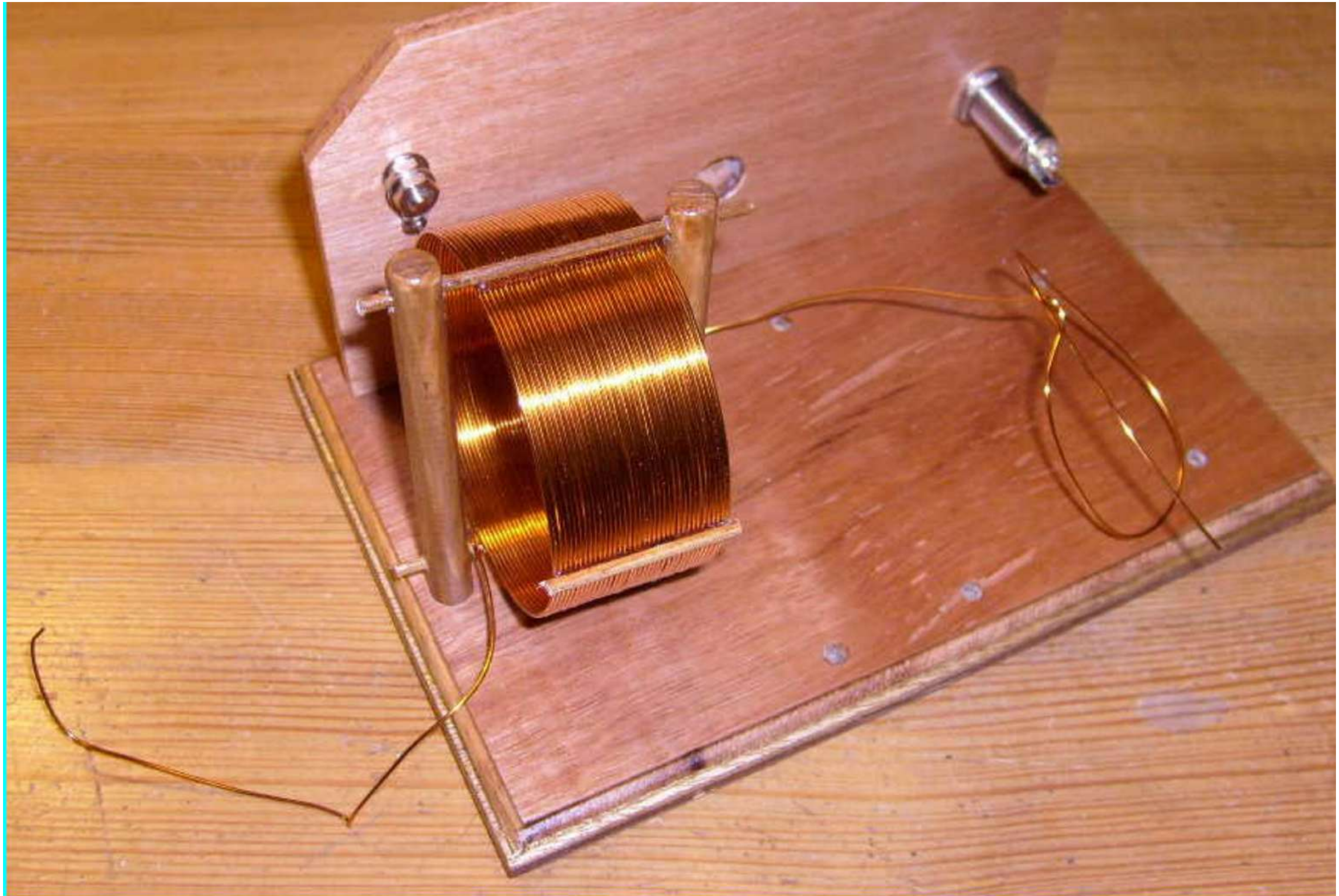


For the coil we need 8.6 meter enamelled copper wire with 0.8 mm thickness.
Hook the begin of the coilwire onto the slot in the tube.
Also fix the begin of the wire on the inside of the tube with some tape.

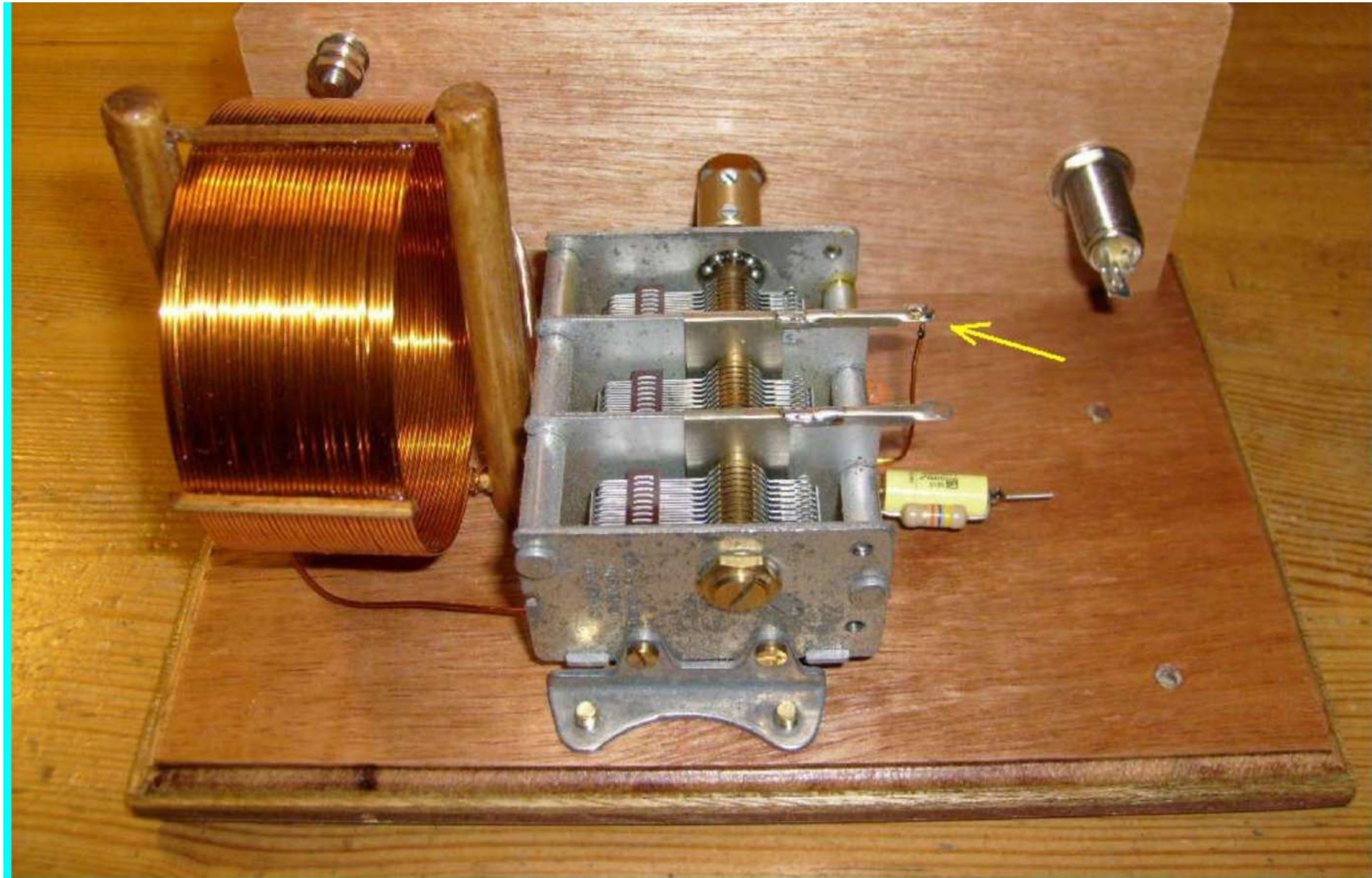




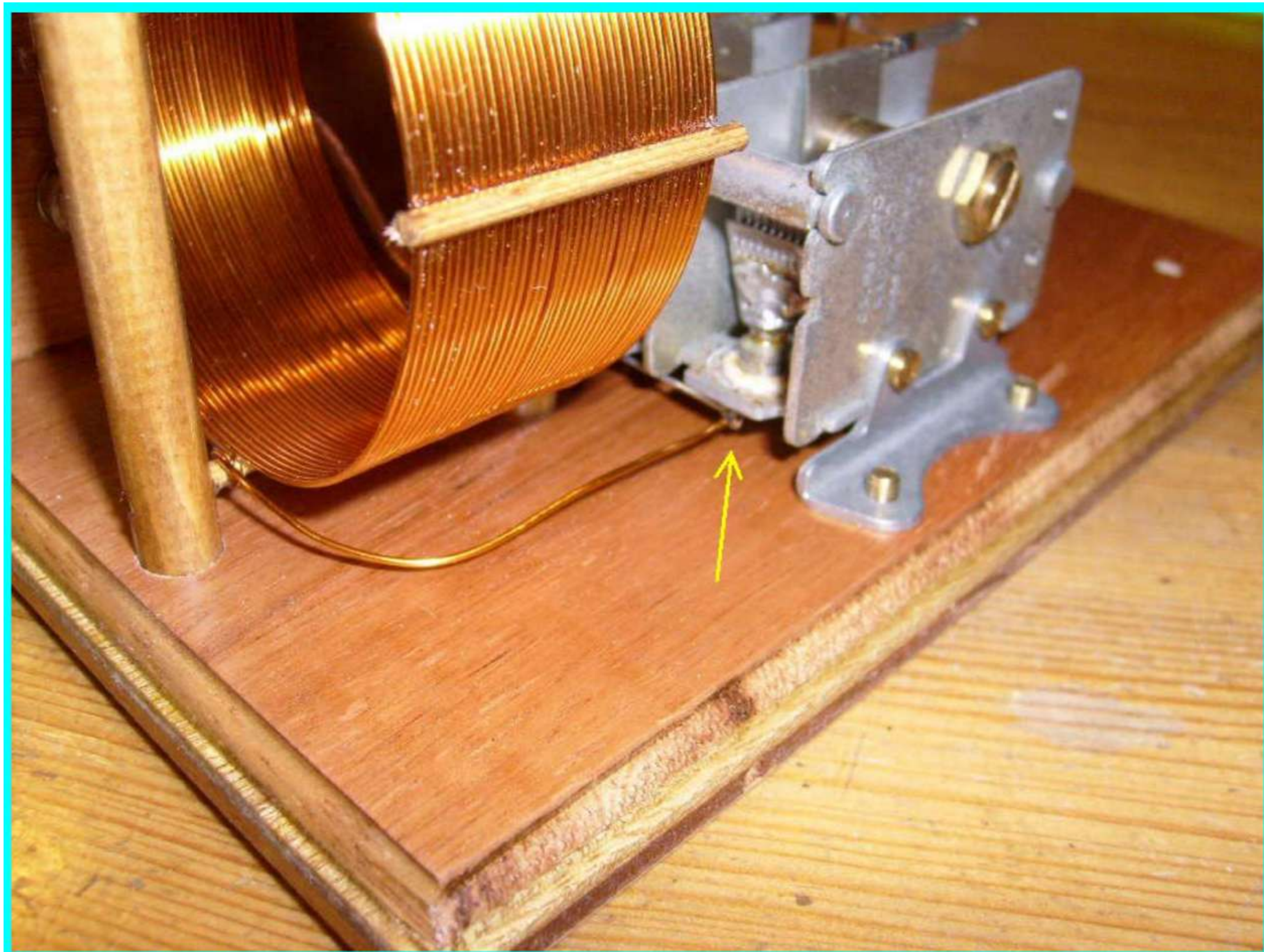
Wait until the glue is hardened.
Remove the rubber bands, the tape and the matches.
Shift the tube out of the coil, and remove the paper out of the coil.
Turn the both ends of the wire one time around the stick at the bottom side of the coil, and apply some extra glue here.



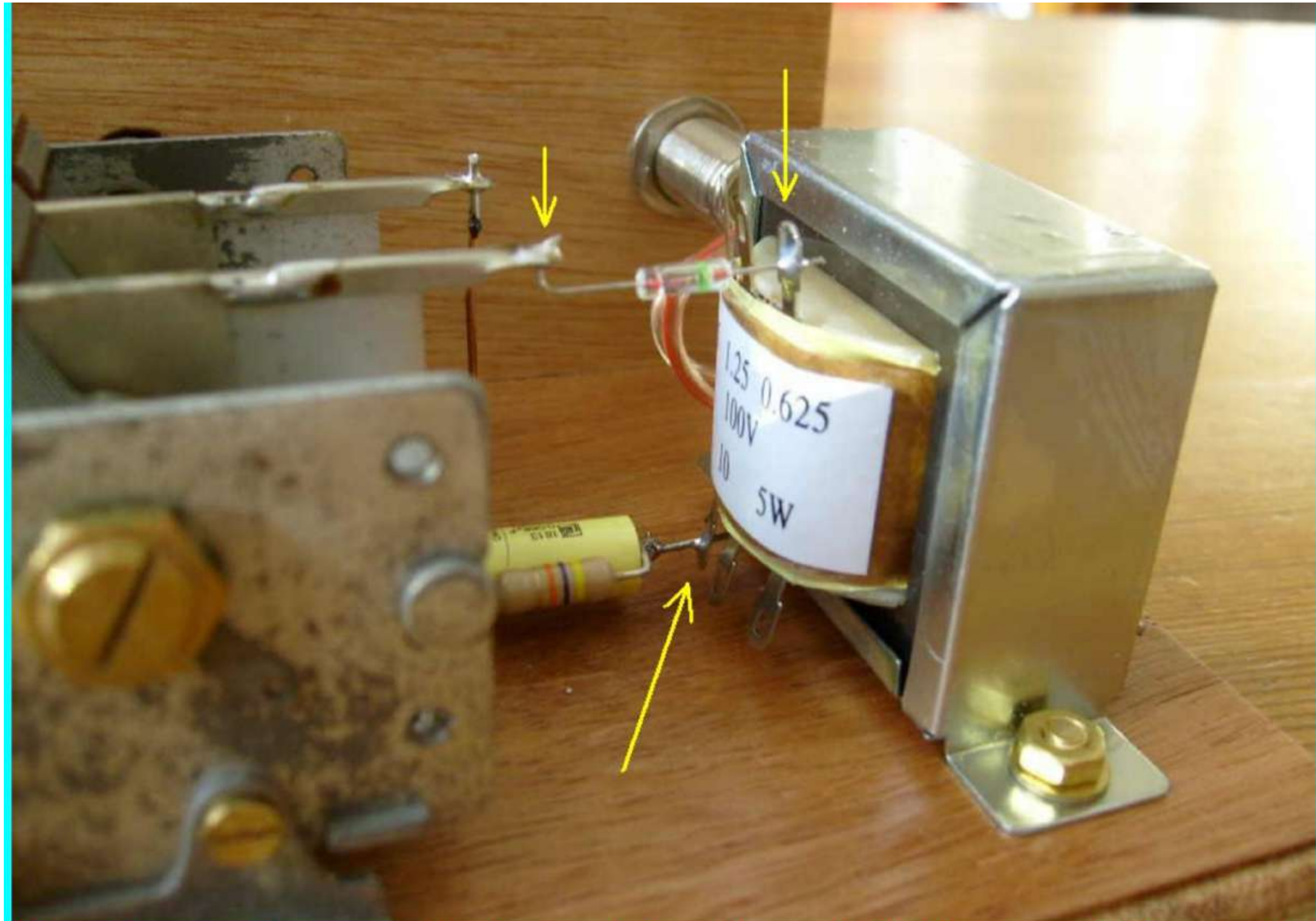
Apply some glue in the holes in the 9 mm sticks
Also apply some glue in the 9 mm holes in the bottom plate.
Place the coil as shown in this picture.
Wait until the glue is dry.



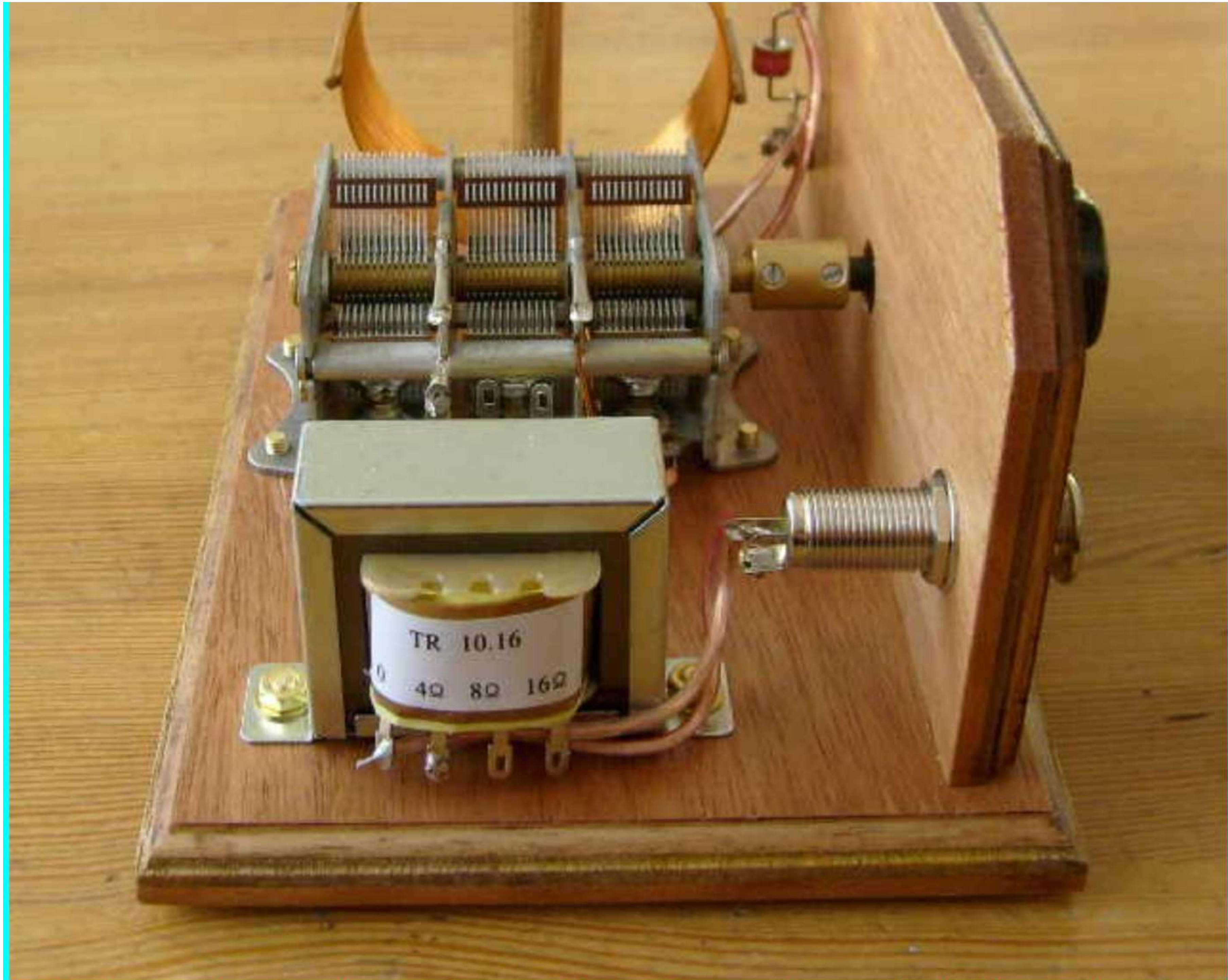
Place the tuning capacitor on the frame.
Fix it with four screws M4x16
One coilwire runs underneath the tuning capacitor, is then bend upwards and cut to length.
Solder this wire to the tuning capacitor (indicated with the arrow in the above picture).
Scrap of the lacquer from the wire, before soldering.



The other wire is cut to length, and soldered to the solder tag of the tuning capacitor (indicated with arrow).

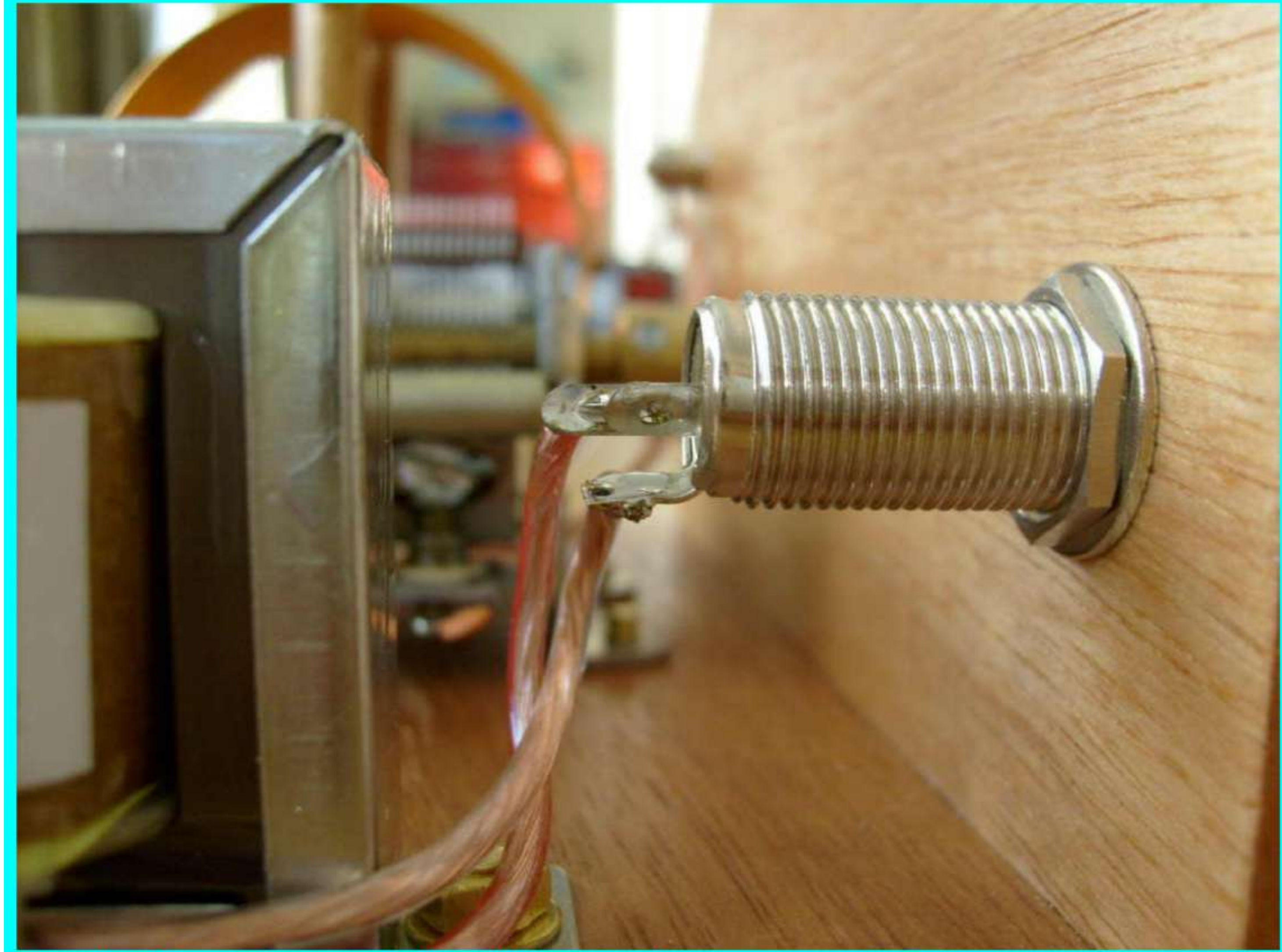


Place the transformer on the frame, fix it with two M4x16 screws, 2 rings and 2 nuts
The wire of the 68 nF capacitor must stick through the "0" connection of the transformer, and is then soldered.
Solder the OA95 diode between tuning capacitor and the "0.625W" connection of the transformer.
The green band on the diode must point towards the transformer.

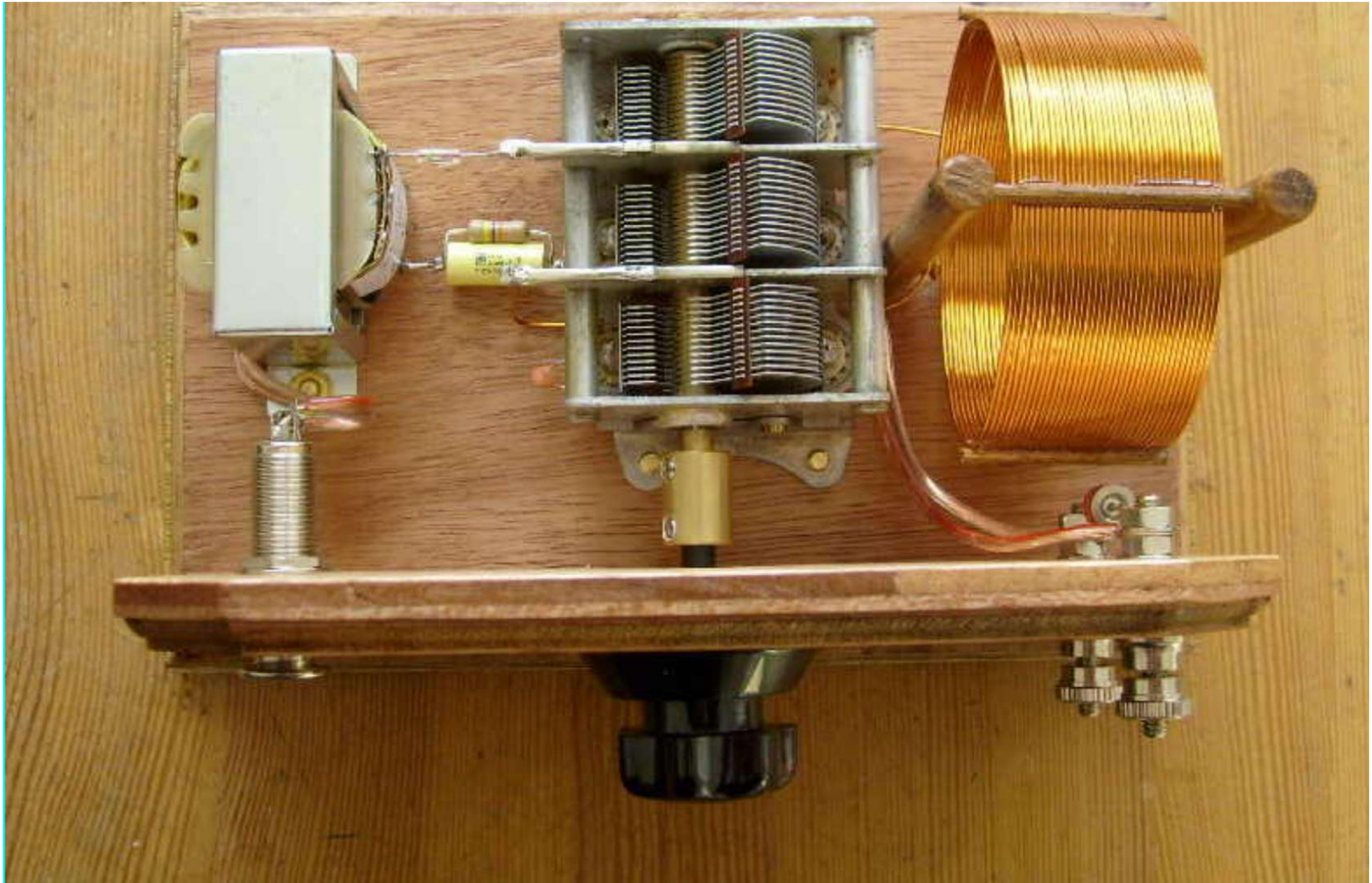


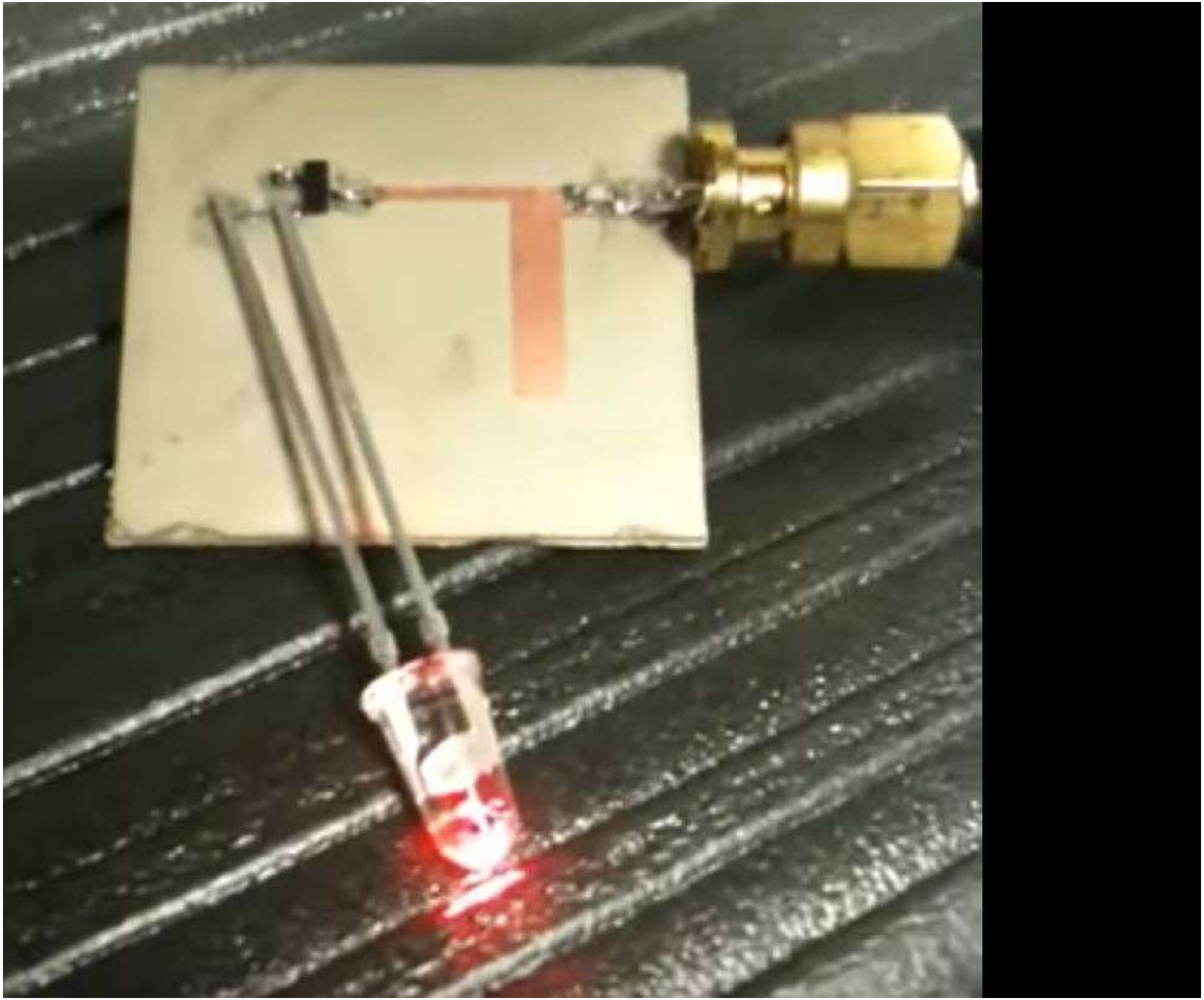
Solder the two wires from the transformer to the headphone socket (see for detail: next picture).

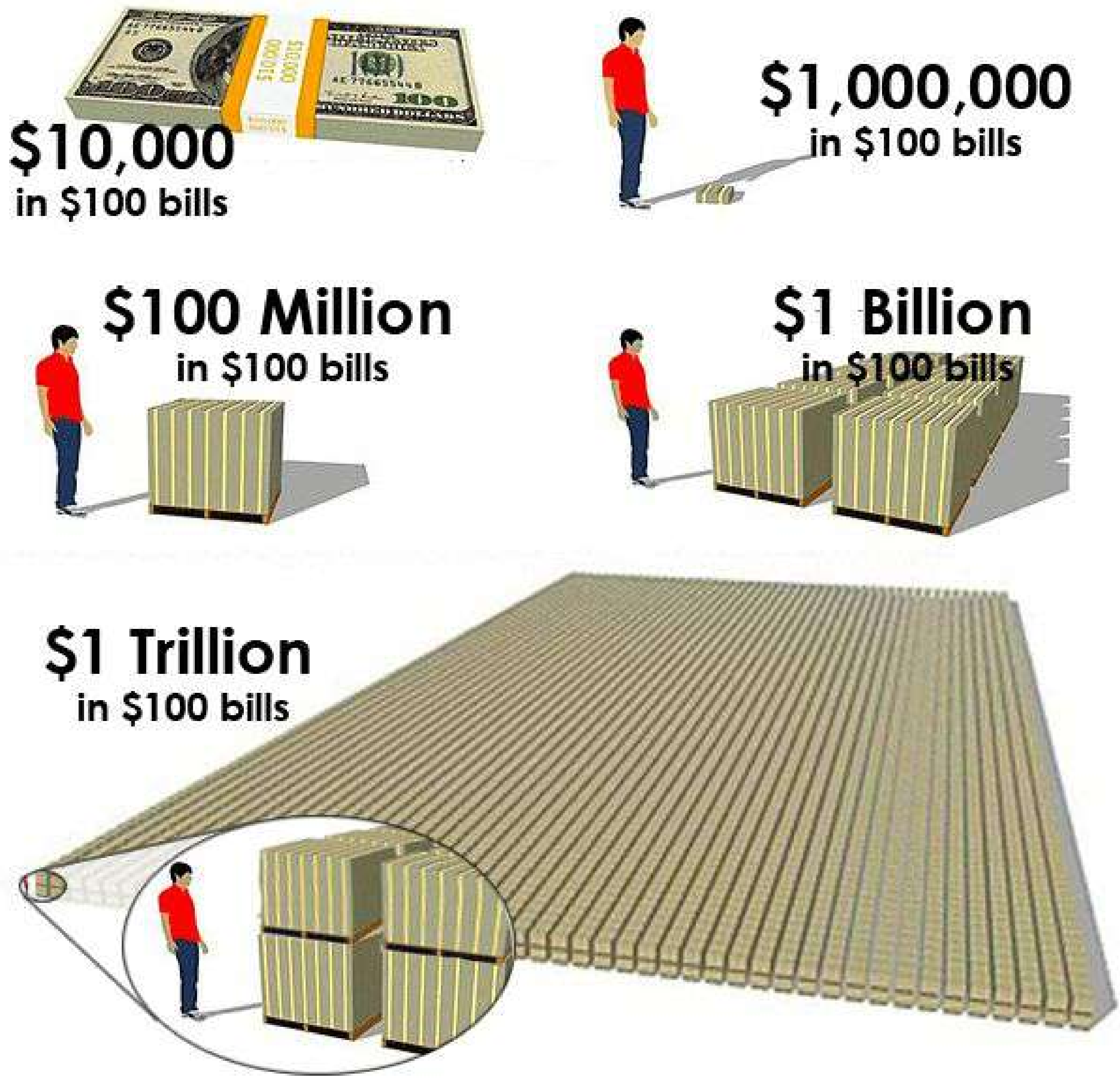
Solder the two wires from the tuning capacitor to the terminal posts.
The wire with the red line on it, comes on the upper (antenna) connection.
The wire without red line, comes on the lower (ground) connection.



Detail of the wires on the headphone socket.
The wire without red line comes on the ground connection.
The wire with the red line comes on the two signal pins, so these two signal pins are connected together.


Mount the extension shaft and the knob on the tuning capacitor.
In the middle position, the pointer on the knob must point upwards.

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in $100 bills
$1,000,000
in $100 bills
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$1 Billion
in $100 bills
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in $100 bills

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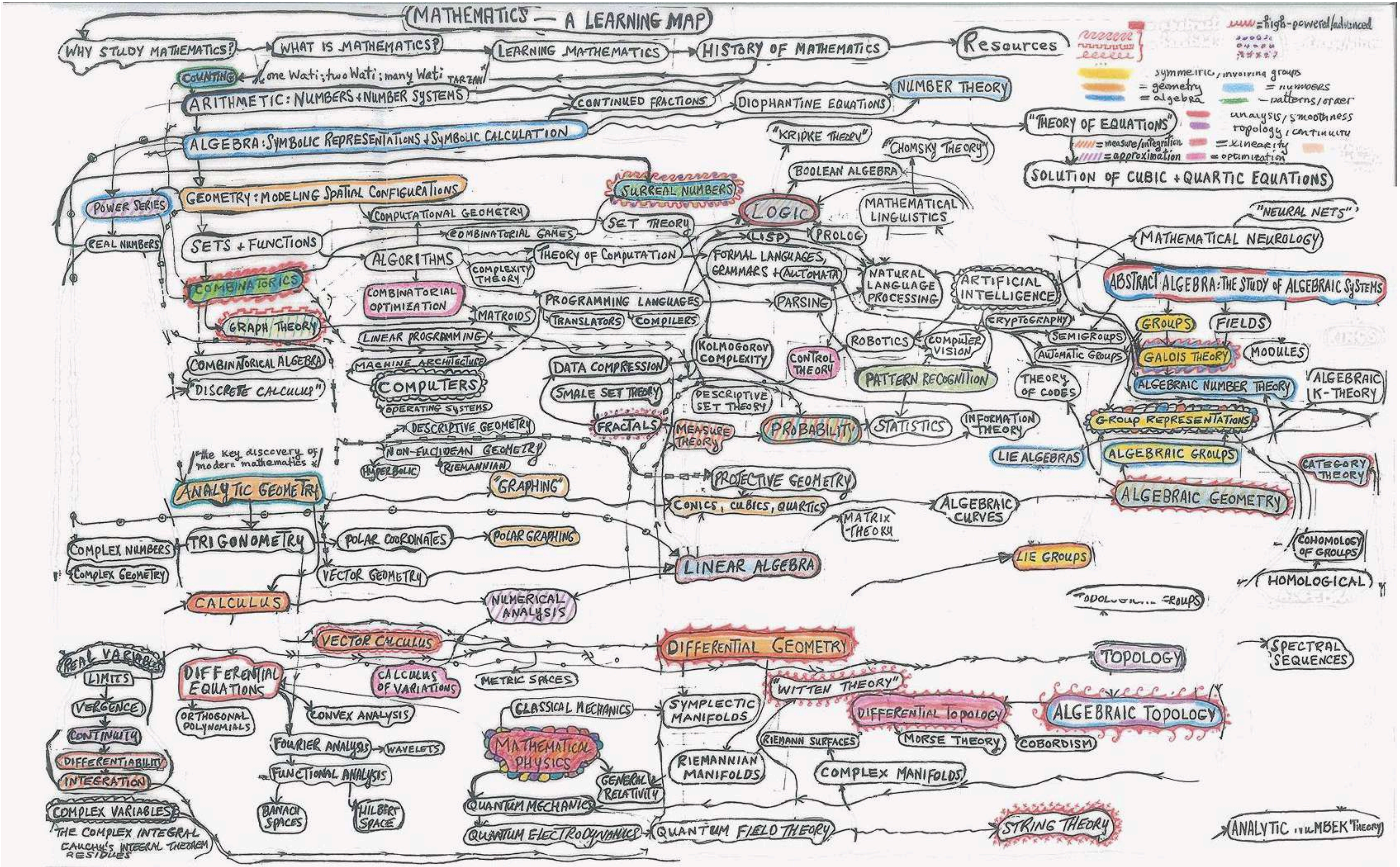
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WHAT IS MATHEMATICS?
LEARNING MATHEMATICS
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symmetric, involving groups
= geometry
= algebra
= numbers
= patterns/order
analysis/smoothness
topology/continuity
= measure/integration
= approximation
= linearity
= optimization
COUNTING
one Wati; two Wati; many Wati
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CONTINUED FRACTIONS
DIOPHANTINE EQUATIONS
NUMBER THEORY
"THEORY OF EQUATIONS"
SOLUTION OF CUBIC + QUARTIC EQUATIONS
ALGEBRA: SYMBOLIC REPRESENTATIONS + SYMBOLIC CALCULATION
"KRIPKE THEORY"
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"NEURAL NETS"
SET THEORY
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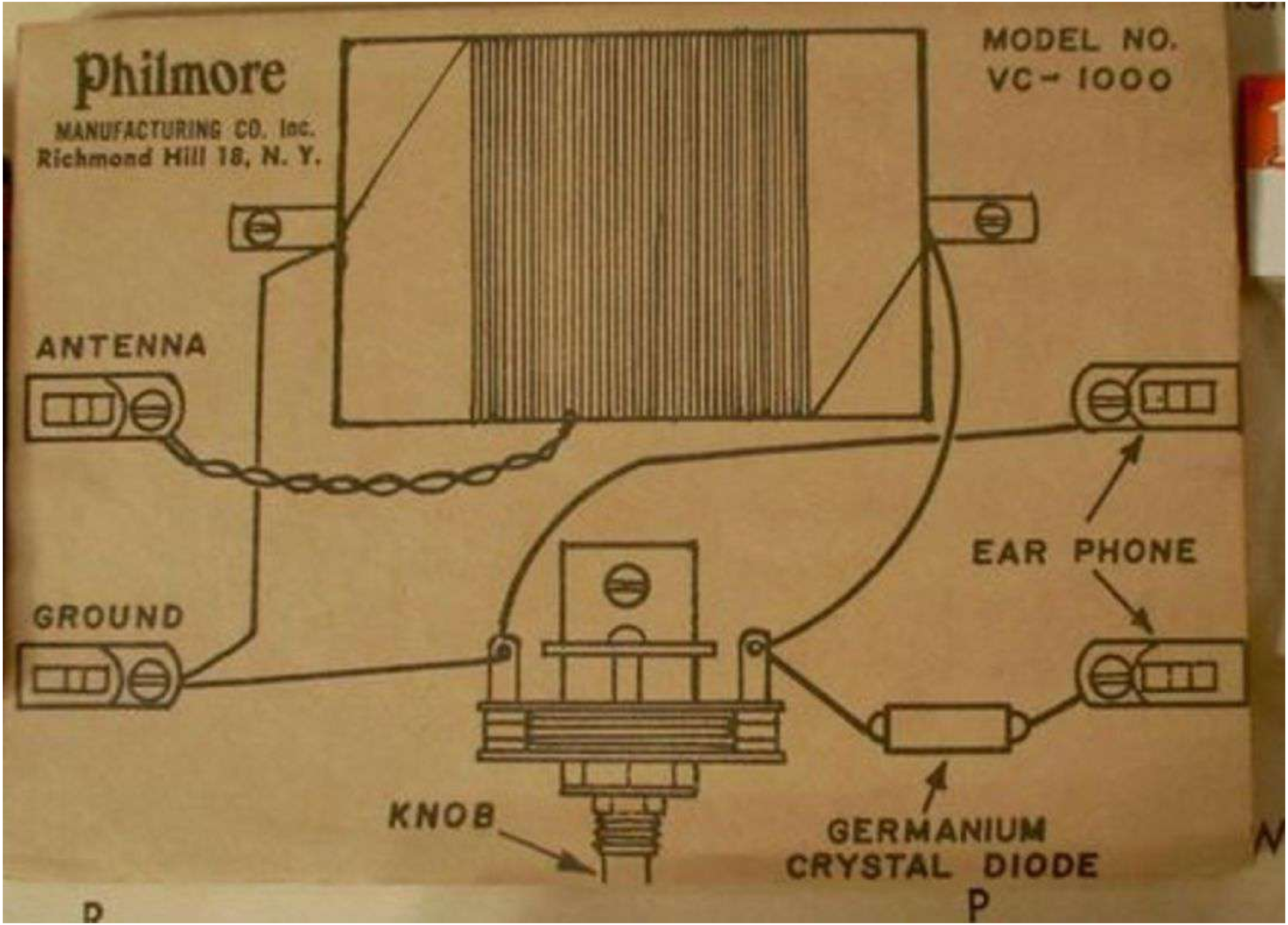
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GROUND
EAR PHONE
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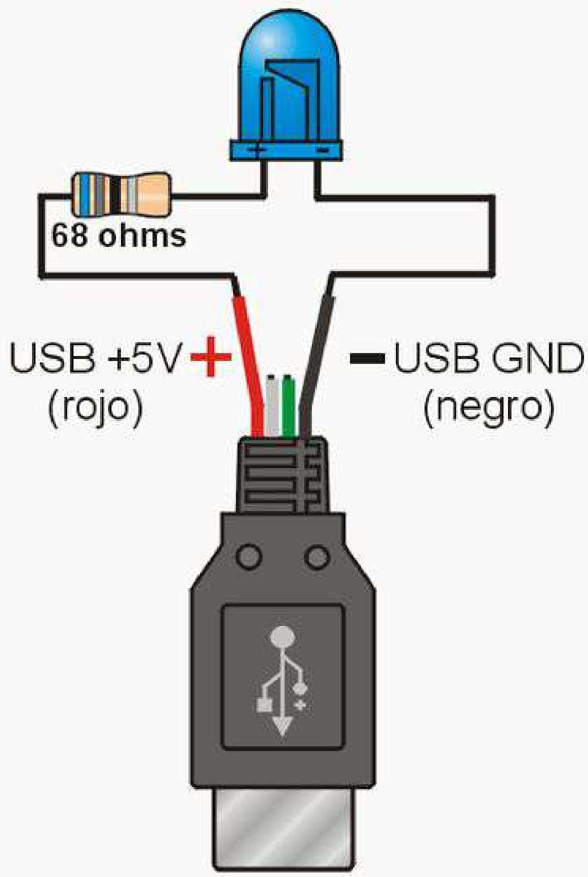
GERMANIUM
CRYSTAL DIODE

1 LED azul
(con tensión entre 3V y 3,6V)



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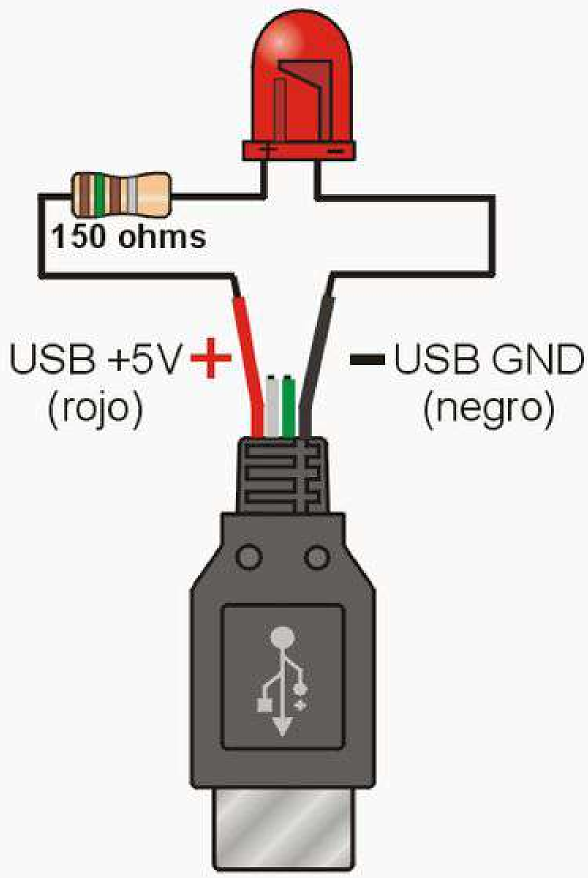
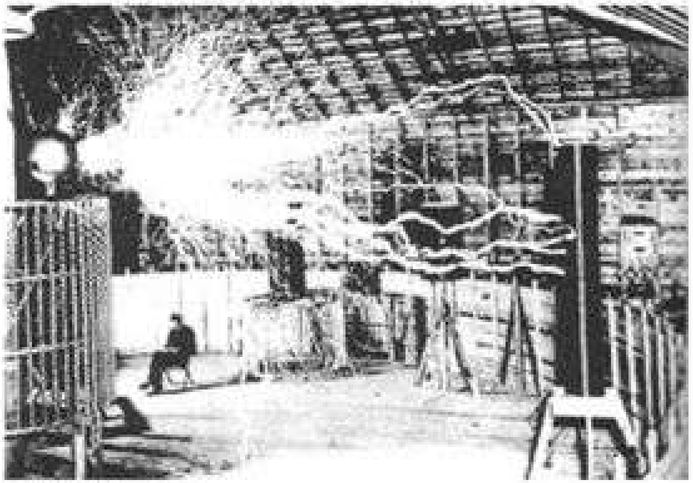
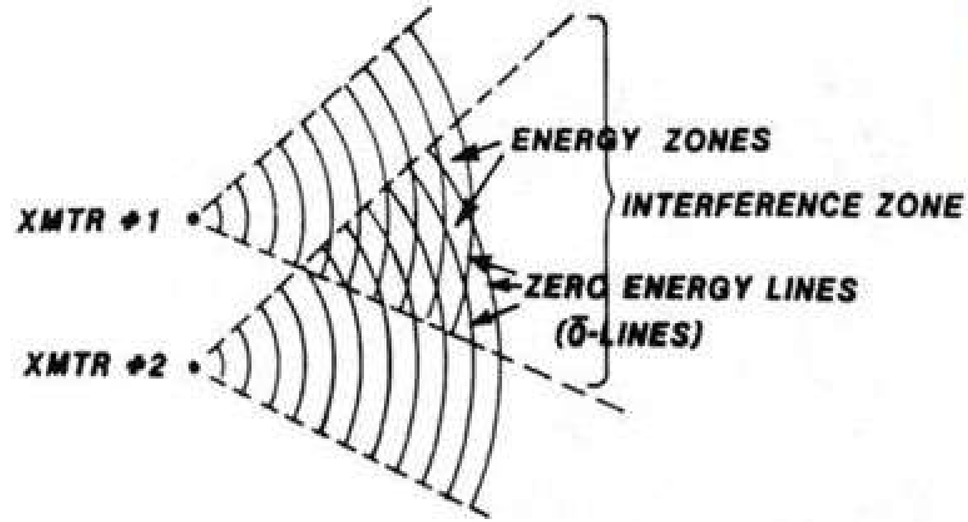
1 LED rojo
(con tensión entre 1,8V y 2,1V)



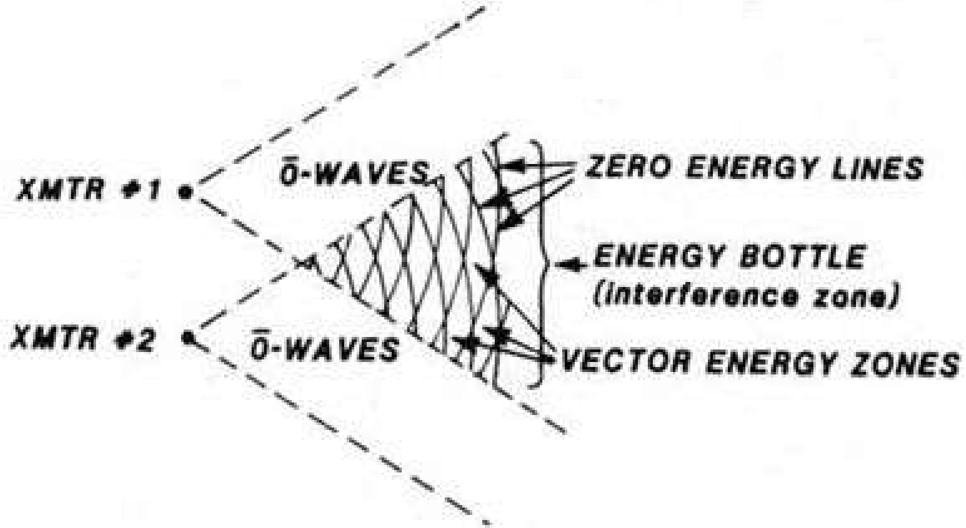
The Tesla Experiment



TRANSVERSE WAVE INTERFERENCE



LONGITUDINAL WAVE INTERFERENCE
(SCALAR WAVES)



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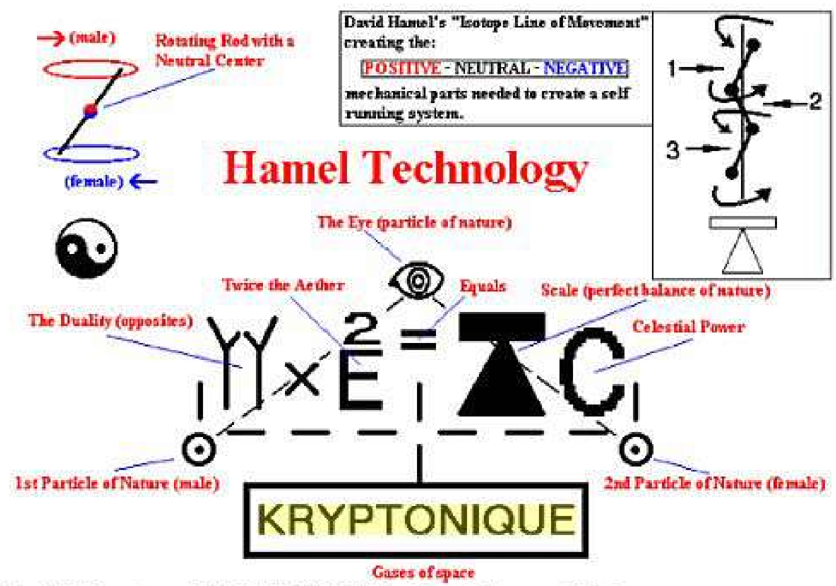
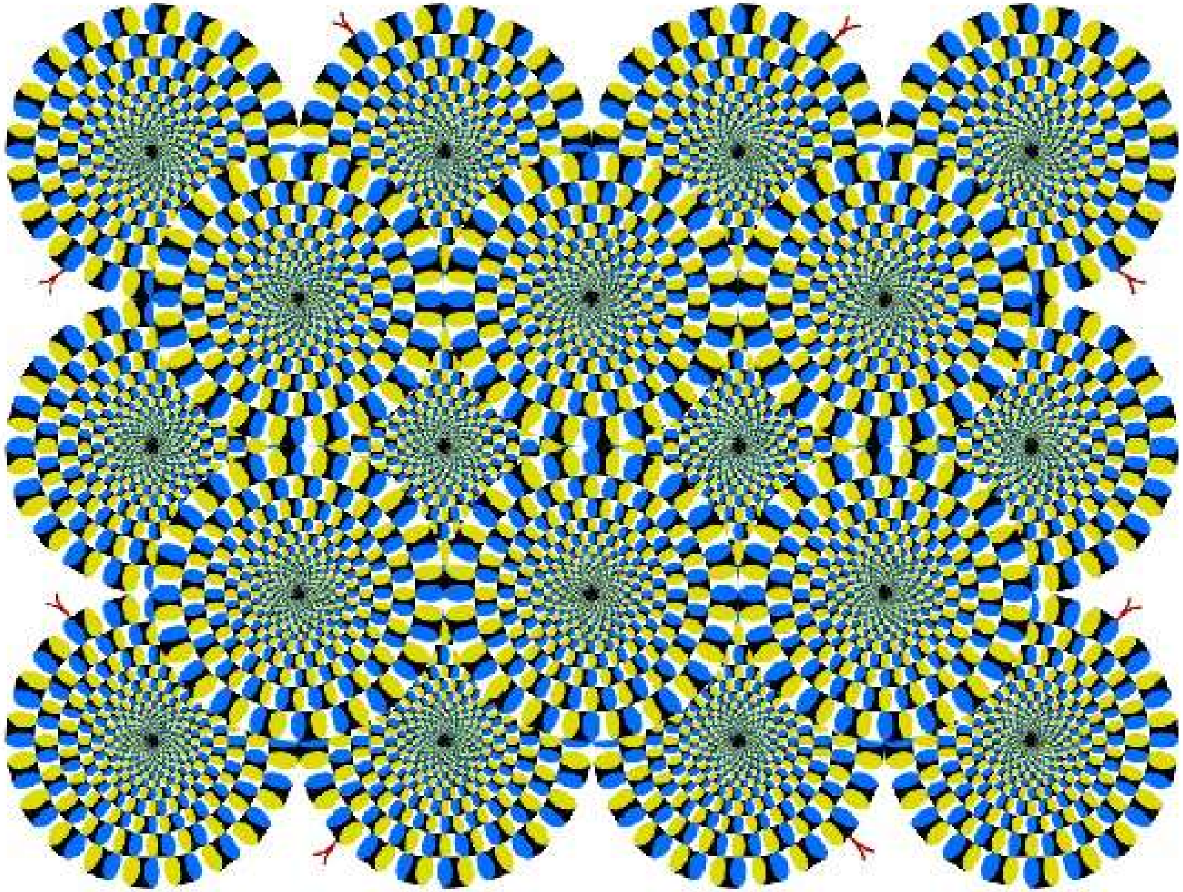
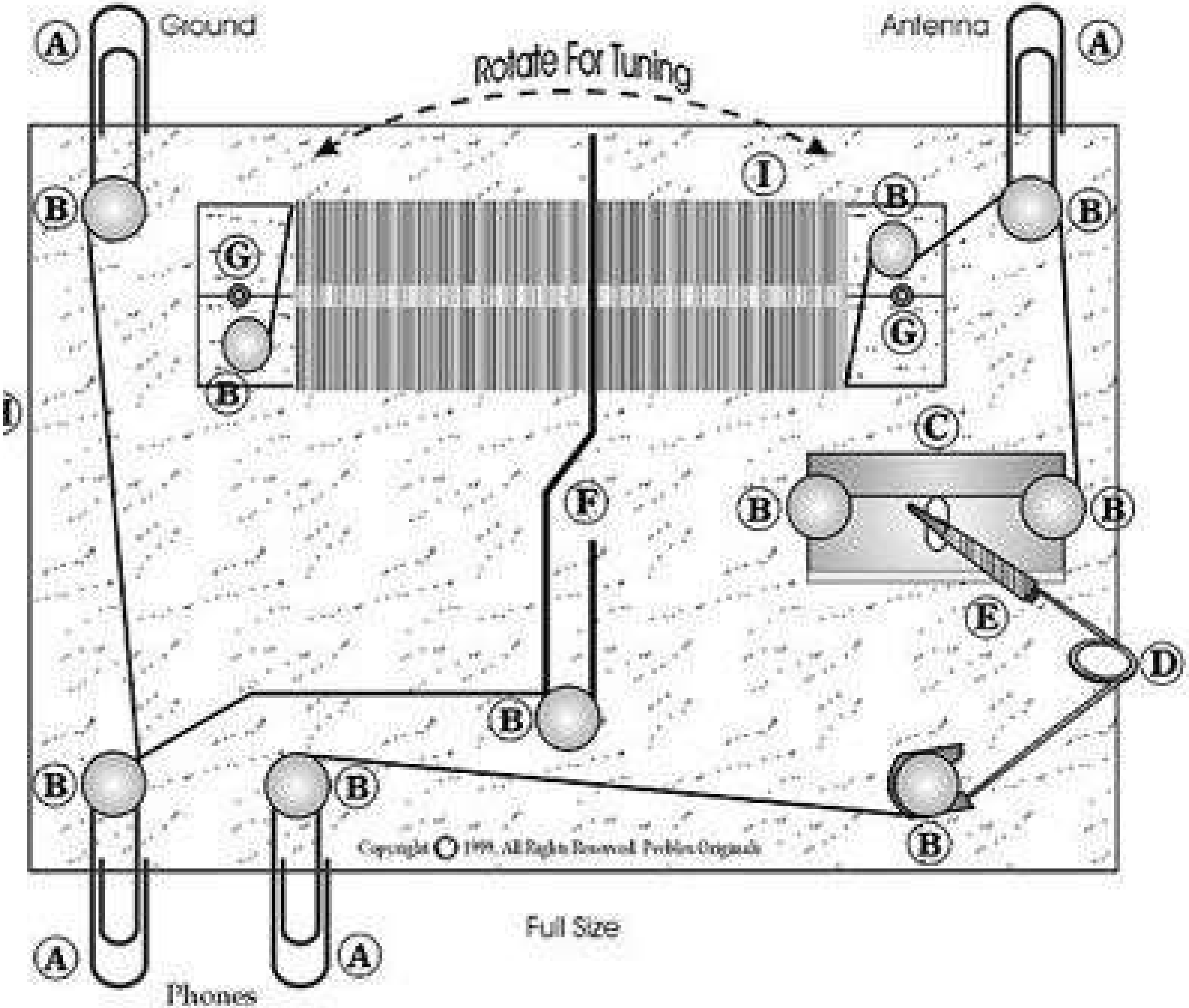


Particle Structure. [The MOST IMPORTANT Hamel Diagram of All.]




Addie's super foxhole radio schematic
magnet wire
120-200 winds
safety pin
jammed into
#2 pencil lead
shorter the pencil
the better
ground:
can be combined
with 1/4" jack
antenna:
the longer
the better
1/2 blued razor
other half connected
to inductor coil
1/4" jack or pickup
to be plugged into amp


Ground
Antenna
Rotate For Tuning
A
A
B
B
B
B
G
G
B
I
C
B
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F
E
D
B
B
B
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A
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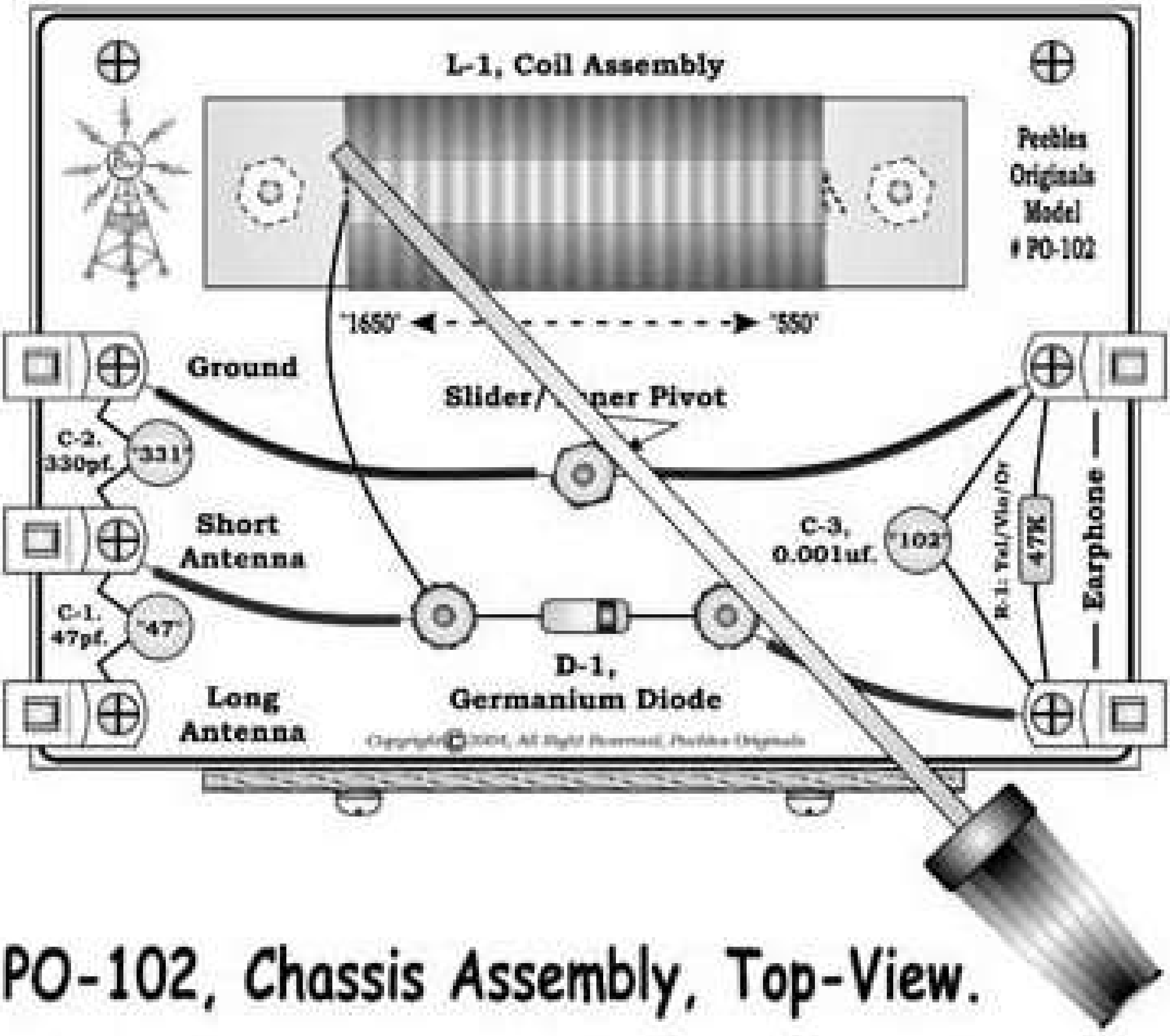
PO-102, w/Crystal Earphone



PO-102, Chassis Assembly, Top-View.


Fire Kit Example
Compressed Trioxane
WaterProof matches
in Waterproof Case
Water Proof Case
Waterproof
Fat Wood
Home-Made
Fire starters
Chem-lights
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Farro Rod
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for Farro Rod

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14. Highlander Folding Saw
15. Kombat UK W/proof Matches
16. Kombat UK 40l Molle Bag
17. Kombat UK Fire Starting KIt
18. Kombat UK Compass
19. Kombat UK Throwing Axe
20. Oasis Water Purification Tablets
21. Pro Force Survival Saw
22. Sawyer Mini Water Filter
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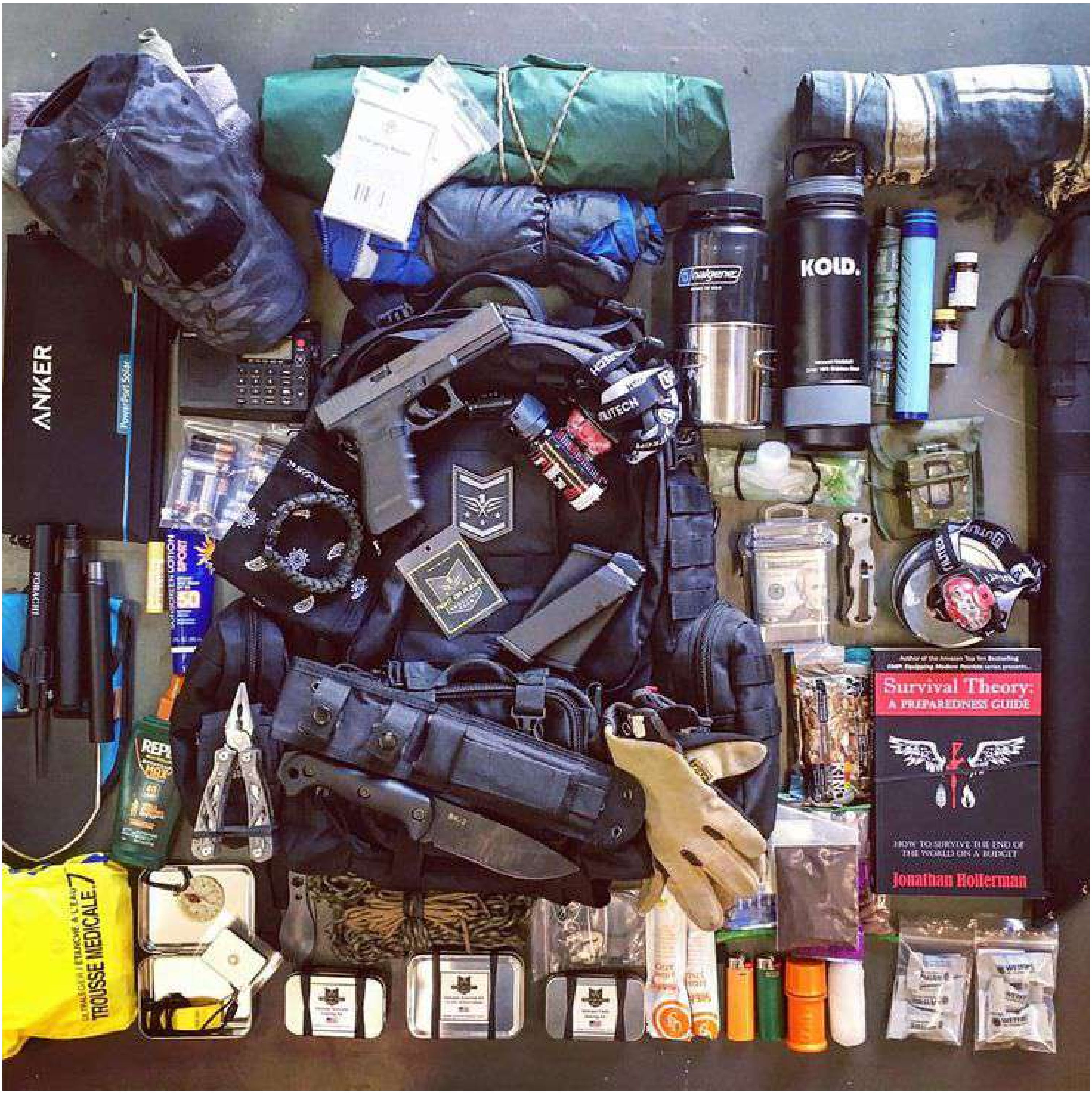
#11: New Wire Handle Canteen Cup	008506	$9.99
#12: Canteen w/ Cover OD 1qt	003927	$8.98
#13: Wise Emergency Food Kit 72hr	017279	$29.99
#14: Medium Transport Pack Black	020355	$48.99
#15: Adventurer Knife Kit	020363	$24.99
#16: Trip Wire: Yellow & Green	019917	$2.99
#17: Waterproof Storage Box	019152	$1.99
#18: 10hr Hand and Body Warmers (x3)	08016	$4.47
#19: Coin Towels 4pk Tubes (x3)	019415	$1.47
#20: 3-IN-1 Compass Whistle	019133	$2.99
#21: 3-IN-1 Waterproof Match Tube	019759	$1.99
#22: Marching Lensatic Army Compass	007127	$11.99
#23: Waterproof Matches	016379	$2.99
#24: Water Purification PA+Plus Tabs	012838	$11.99
#25: 11 Function Survival Tool	019145	$2.99
#26: German Folding Stove w/ Fuel	003929	$2.99
Total:		$322.69
		-20%

Total Bug Out Bag Weight: 12.4lbs

Your Price: $258.15



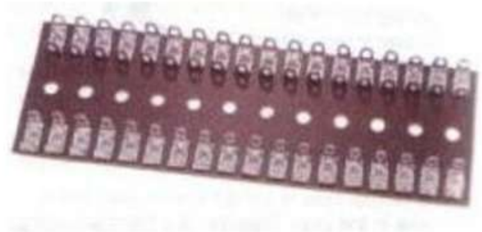
ANKER
PowerPort Solar
KOLD.
nalgene
Survival Theory:
A PREPAREDNESS GUIDE
HOW TO SURVIVE THE END OF THE WORLD ON A BUDGET
Jonathan Hollerman
TROUSSE MEDICALE .7
REPEL


Bug out Bag
Water Bottle w/ Charcoal Filter
Aquamira Tablets
70 oz Camelbak Bladder in bag
Handwarmers
Cotton Balls
Fire Starter
Knife
Matches
TP
BG Parang
Fenix Flashlight w/
CR123 Batteries
6 MRE's
Fuel Stove Kit
Spare Contcats
First Aid Kit w/ Quikclot
Israeli Bandage
Walther P99 w/ 130 rds
of 9mm
Baby Wipes


6 EMERGENCY USES FOR PARACORD
Did you know?
A single length of paracord has been tested to handle 550 lbs of weight.
1. Snare Trap
2. Fishing Line
3. Shelter
4. Fishing Net
5. Fire
SOCKET
BOW
DRILL
FIRE BOARD
CORD
6. Bear Bag
Did you know?
There are seven internal strands, each of which comes apart into two, so there's 14 thin lines.


AFTER 1 HOUR
© BRIGHTSIDE

5 WAY TAG STRIP



36 WAY TAG STRIP - TWO ROWS

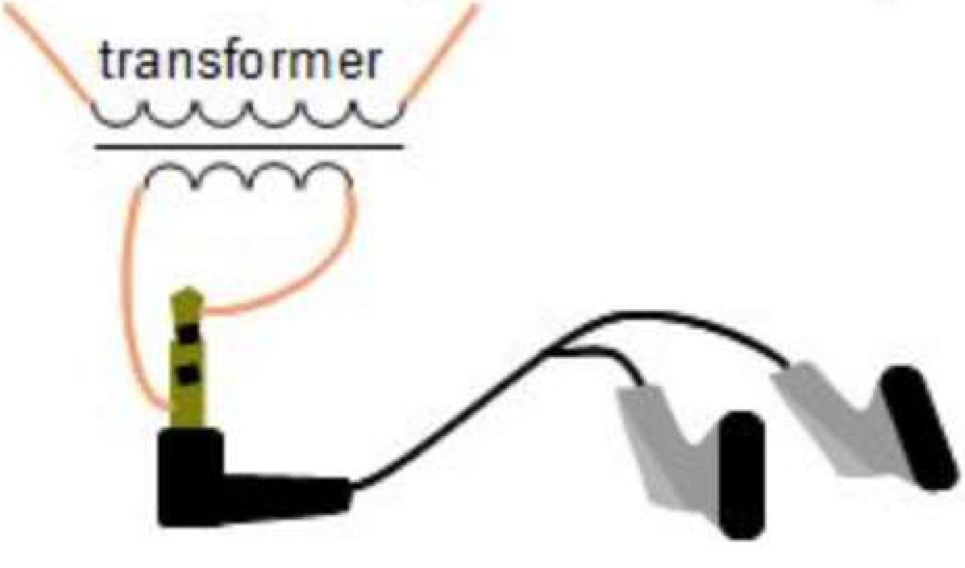
e wired together ,with a little ingenuity, with the component wires being held together in the grip of solderless crocodile clips, whereby the conne
older.

ex circuits a plastic Terminal Block (sometimes referred to as a choc' or chocolate block) can be utilised very effectively indeed. These are used
15 Amp and 30 Amp. The 5 and 15 Amp Terminal Blocks I have found to be the most suitable. The various component wires can be trappec
makes it easy to change the components around when experiment with different circuits. See The EXPERMENTAL CRYSTAL SET for more det

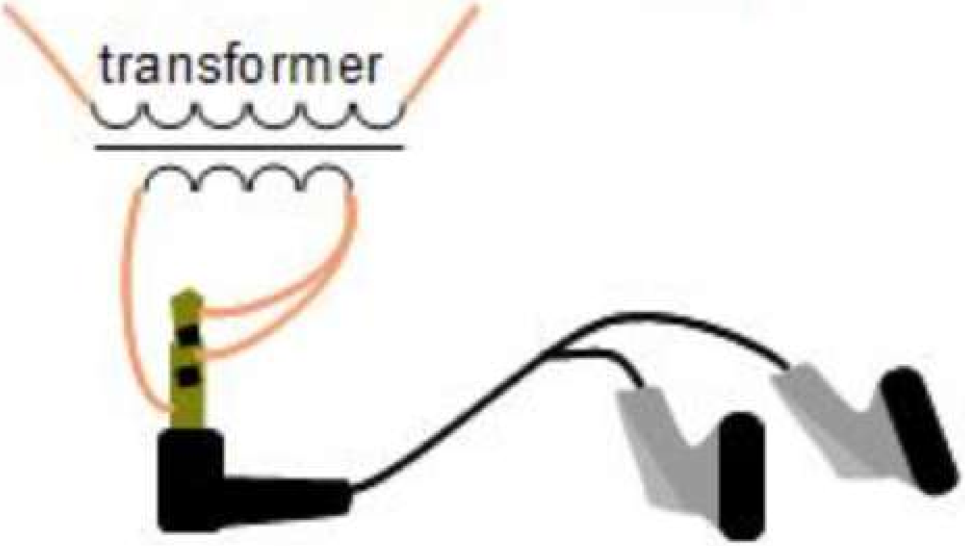
'CHOCOLATE' TERMINAL BLOCK

Where to connect to the earbud jack.

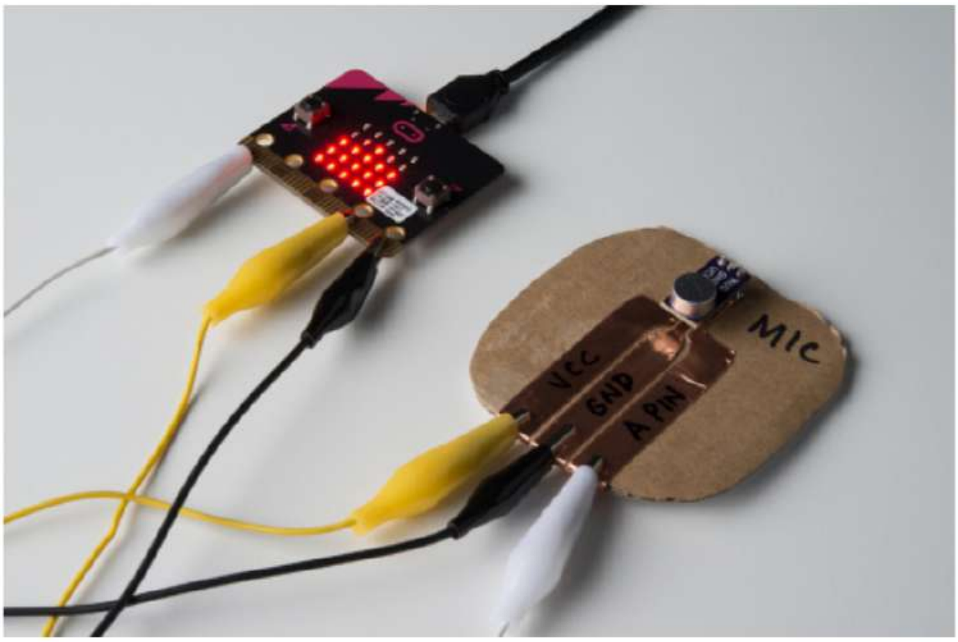
For connecting to one earbud only.



For connecting to both earbuds.



The current-limiting resistors are part of the cardboard circuit. The black spots are where I used the Bare Conductive paint



The micro:bit is plotting the analog values on the 5x5 LED matrix, which represent the noise level in the room.

All you need to get started is a roll of copper tape, a few components and conductive paint. One roll of tape and tube of paint can make about 200 circuits.

COSMIC VIBRATIONS

(THESE INTERVALS AND FIGURES ARE APPROXIMATE AND NOT EXACT)

Octave	Manifestation	Vibrations per second	Gaps
1	TOUCH	2	
2		4	
3		8	
4		16	
5	SOUND	32	
6		64	
7		128	
8		256	
9		512	
10		1,024	
11		2,048	
12		4,096	
13		8,192	
14		16,384	
15	ELECTROMAGNETIC (Longer Radio Waves)	32,768	
16		65,536	
17		131,072	
18		262,144	
19		524,288	
20		1,048,576	
21		2,097,152	
22		4,194,304	
23		8,388,608	
24		16,777,216	
25		33,554,432	
26		67,108,864	
27		134,217,728	
28		268,435,456	
29	ELECTROMAGNETIC	536,870,912	
30		1,073,741,824	
31		2,147,483,648	
32		4,294,967,296	
33		8,589,934,592	
34		17,179,869,184	
35		34,359,738,368	
36		68,719,476,736	
37		137,438,953,472	
38		274,877,906,944	
39	HEAT OR INFRARED	549,755,813,888	
40		1,099,511,627,776	
41		2,199,023,255,552	
42		4,398,046,511,104	
43		8,796,093,022,208	
44		17,592,186,044,416	
45		35,184,372,088,832	
46		70,368,744,177,664	
47		140,737,488,355,328	
48		281,474,976,710,656	
49	VISIBLE LIGHT	562,949,953,421,312	
50		1,125,899,906,842,624	
51	ULTRAVIOLET	2,251,799,813,685,248	SPIRIT ELECTRONS
52		4,503,599,627,370,496	
53		9,007,199,254,740,992	
54		18,014,398,509,481,984	
55		36,028,797,018,963,968	
56		72,057,594,037,927,936	
57	X-RAY	144,115,188,075,855,872	
58		288,230,376,151,711,744	
59		576,460,752,303,423,488	
60			
61			PSYCHIC PROJECTIONS
62		4,611,686,018,427,387,904	
63	GAMMA AND COSMIC RAYS		
64		*The Vibrations in these octaves increase to an incomprehensible number per second.*	
65			
66			
67			
68			
69			
70		*The phenomena of psychic projections and soul essence occur in octaves considerably beyond those of any known material manifestations. Consequently, they must not be considered as immediately following any manifestations which we have shown on this chart.*	
71			
72			SOUL ESSENCE
73			
74			
75			
76			
77			
78			
79			
80			

NOTICE

This chart was carefully compiled by the Editorial and Research Departments of AMORC College after consulting the most eminent scientific authorities on the subjects of physics and chemistry and comparing their observations and notations with the reports from the Rosicrucian laboratories in foreign countries.

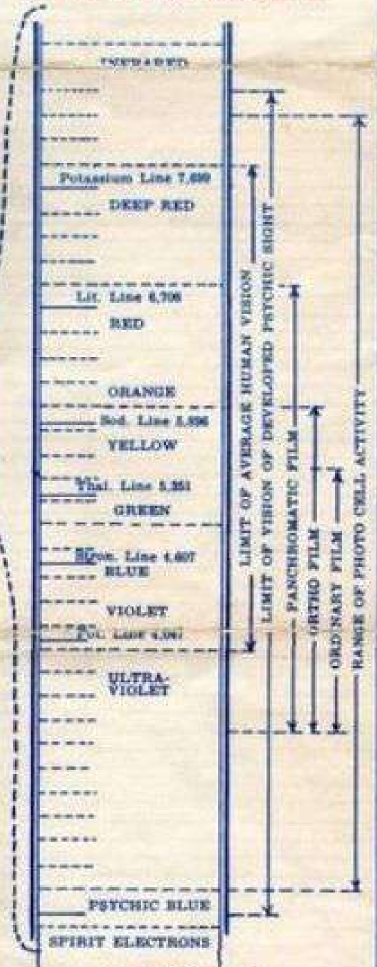
There is a slight disagreement in regard to the rates of vibrations for the various keys of the musical keyboard, due to different standards of pitch in various countries, and there is some disagreement among scientific authorities in regard to the colors associated with various musical notes. This chart represents not only the consensus of most of these authorities but also adheres strictly to what the Rosicrucians have been able to demonstrate as truth in our own laboratories and in the experiments of thousands of members in various parts of the world. Regardless, therefore, of any disagreement with authorities outside the organization, this chart is the authentic presentation of the Rosicrucian knowledge.

This chart is to be used by the members of the Rosicrucian Order in connection with their studies and experiments and is not to be used for any other purpose or in any other way. Like the lessons themselves, this chart and the facts contained on it are reserved and restricted in use under the rules and regulations of the organization.

INTERNATIONAL SEAL OF THE SUPREME LODGE of the Rosicrucian Order

AD ROSAM PER CRUCEM · AD CRUCEM PER ROSAM

THE SOLAR SPECTRUM



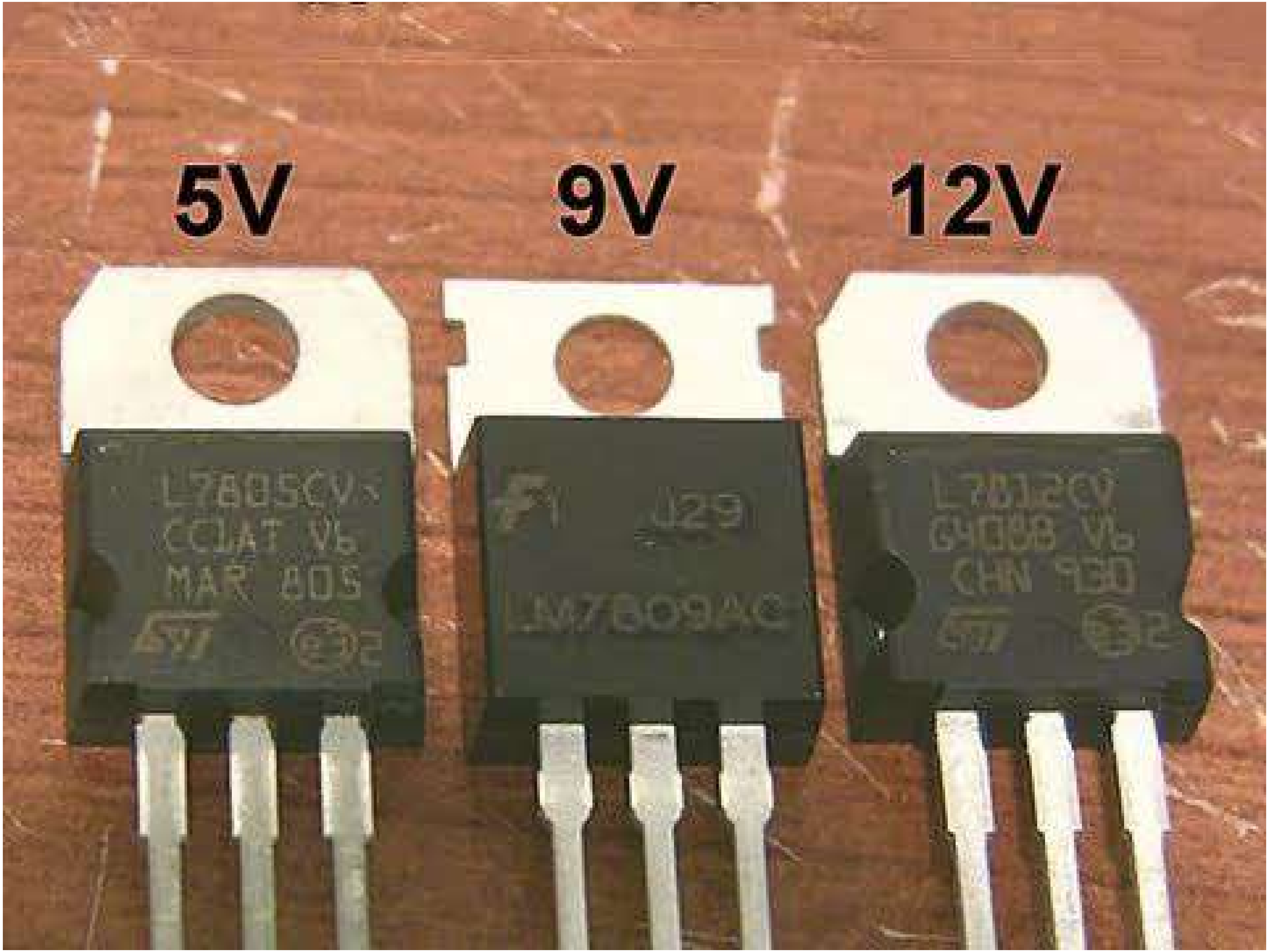
AMORC

THE

Rosicrucian Order

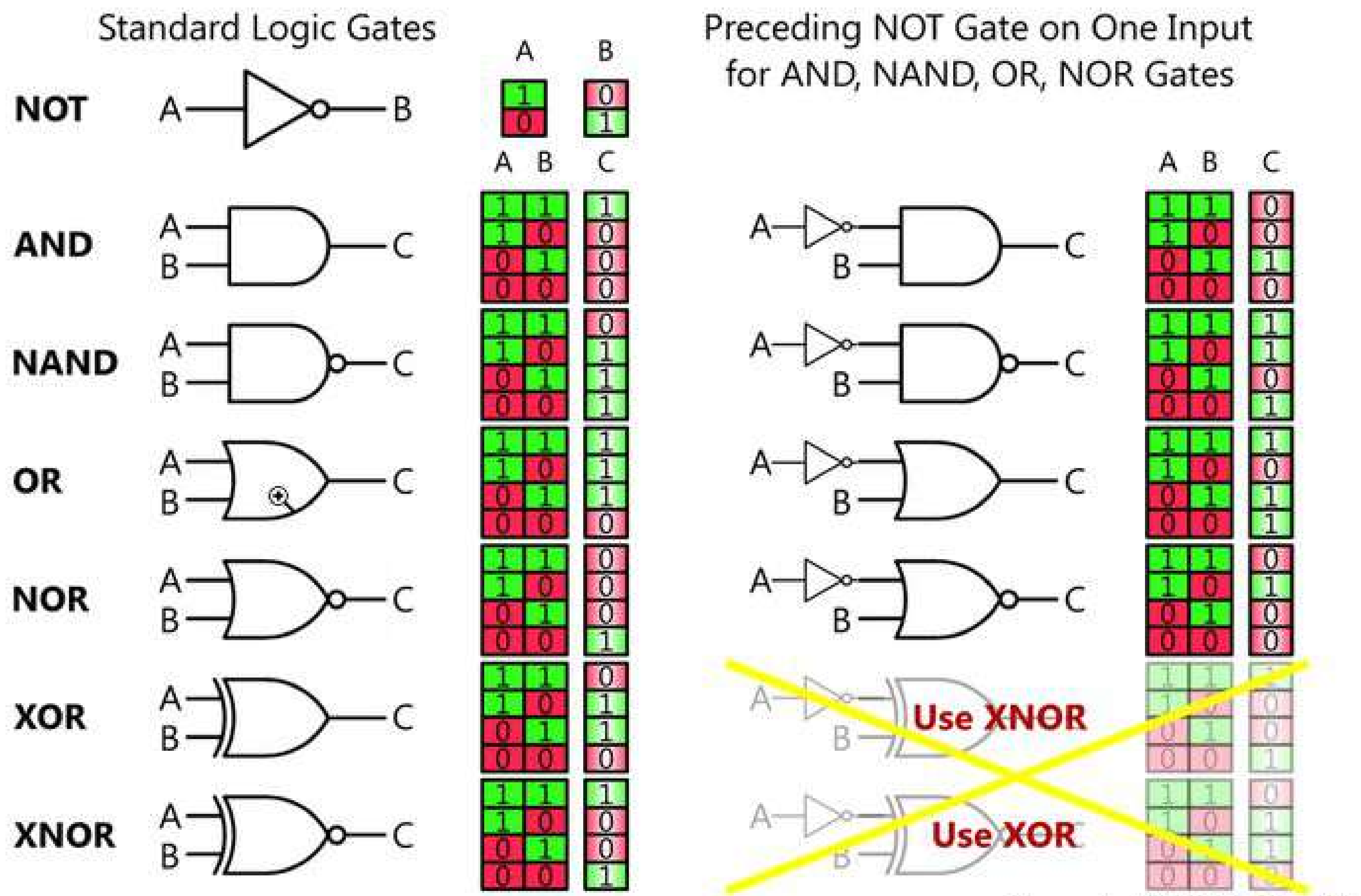
San Jose, California

LITHO. IN U. S. A.



5V
9V
12V
L7805CV
LM7809AC
L7812CV

7 LOGIC GATES & 4 USEFUL COMBINATIONS



Copyright 2012 PicoKit

TYPE N F

SMA M

PAL/BELLING LEE F

UHF F

MCX MALE
(OTHER END)

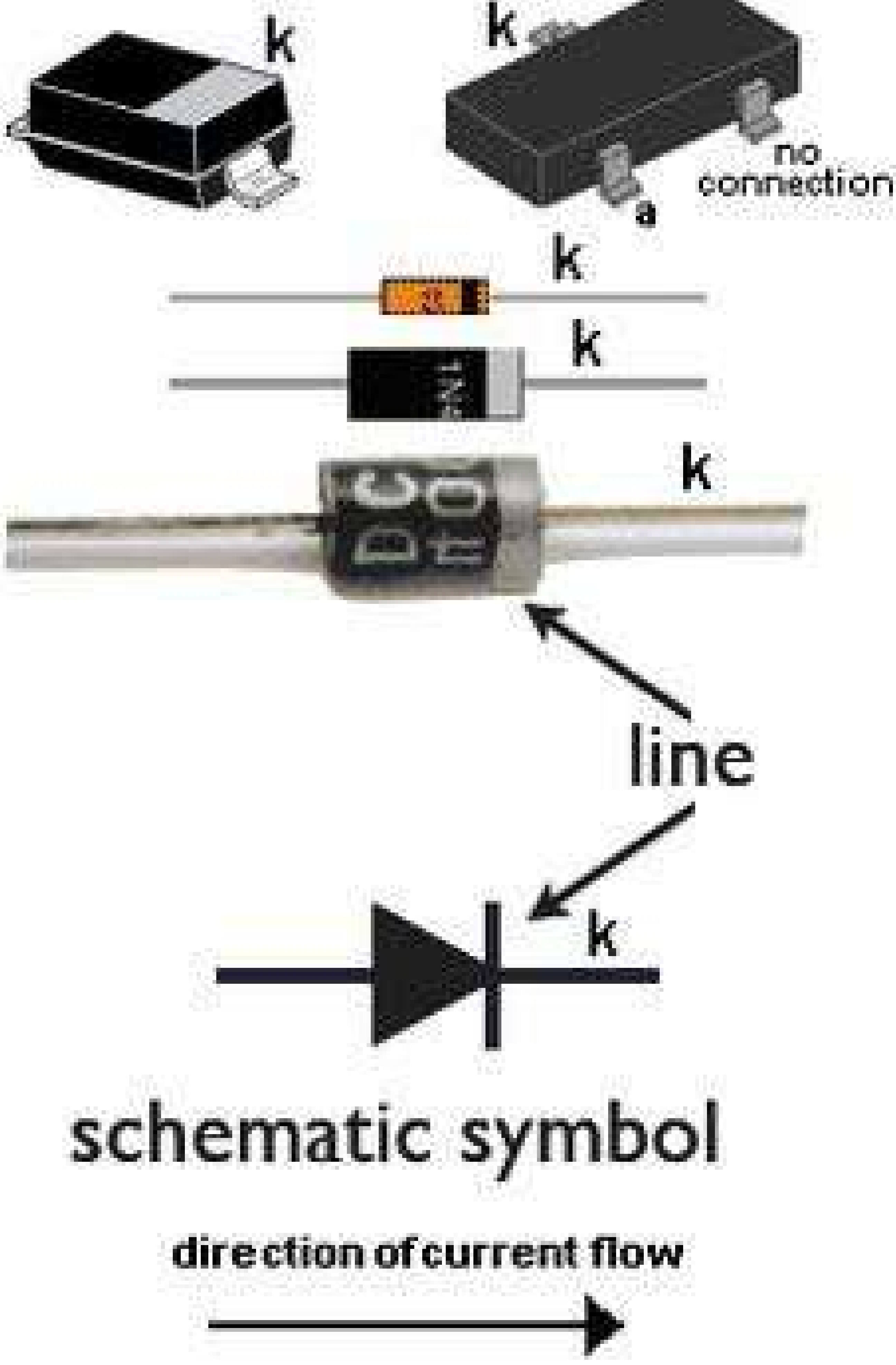
TYPE F F

BNC F

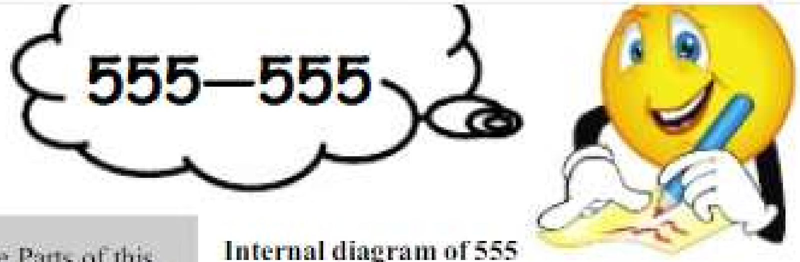
SMA F


TYPE N F
SMA M
PAL/BELLING LEE F
UHF F
MCX MALE
(OTHER END)
TYPE F F
BNC F
SMA F

DIODE


k
k
no
connection
a
k
k
k
line
k
schematic symbol
direction of current flow

7. 555 Timer Projects

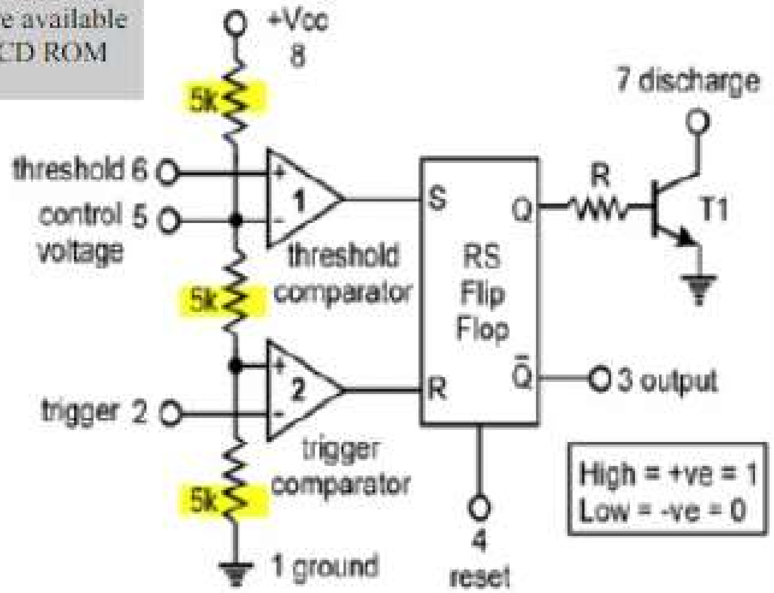


In this section we will make :

7.1 4 Key Piano
7.2 Light sensitive music circuit
7.3 Light controlled Police Siren
7.4 Touch Switch
7.5 Timer
7.6 Continuity Tester
7.7 Knight Rider
7.8 Cricket Game
7.9 Multipurpose circuit
7.10 Johnson counter

Some Parts of this project are available in Video CD ROM

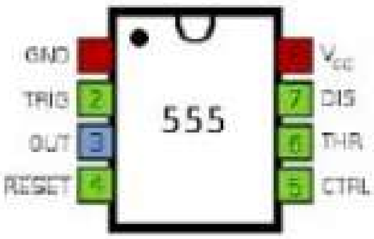
Internal diagram of 555



What is it about ?

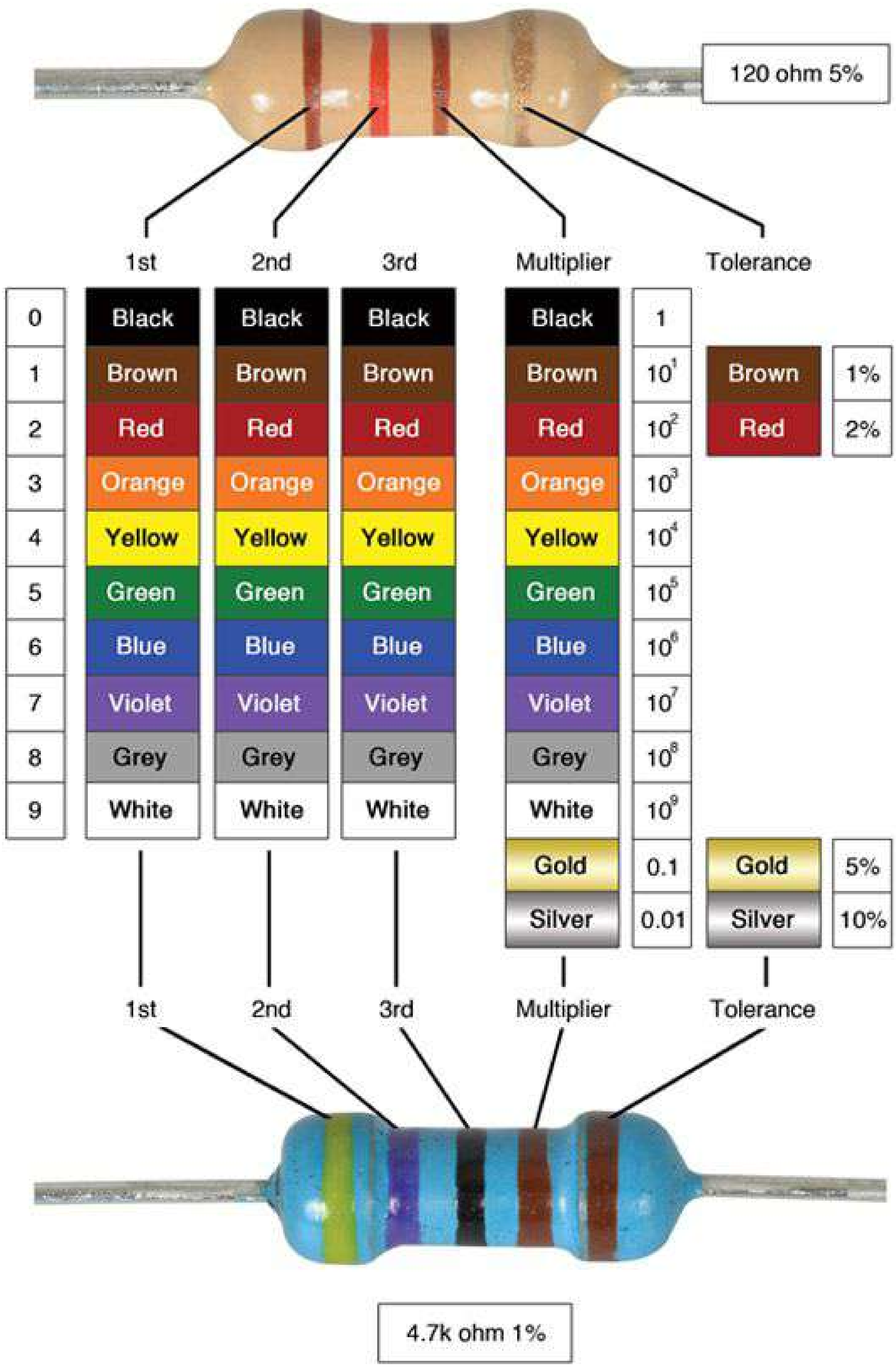
555 timer integrated circuit (IC) is a very popular chip used in variety of applications like timer, pulse generation and oscillators. This is a low cost, stable and widely available chip which makes it favorite for hobbyists. The internal components of 555 as shown in figure consists of 2 comparators and a flip flop. All of these components contain 25 transistors and 15 resistors packed in the IC.

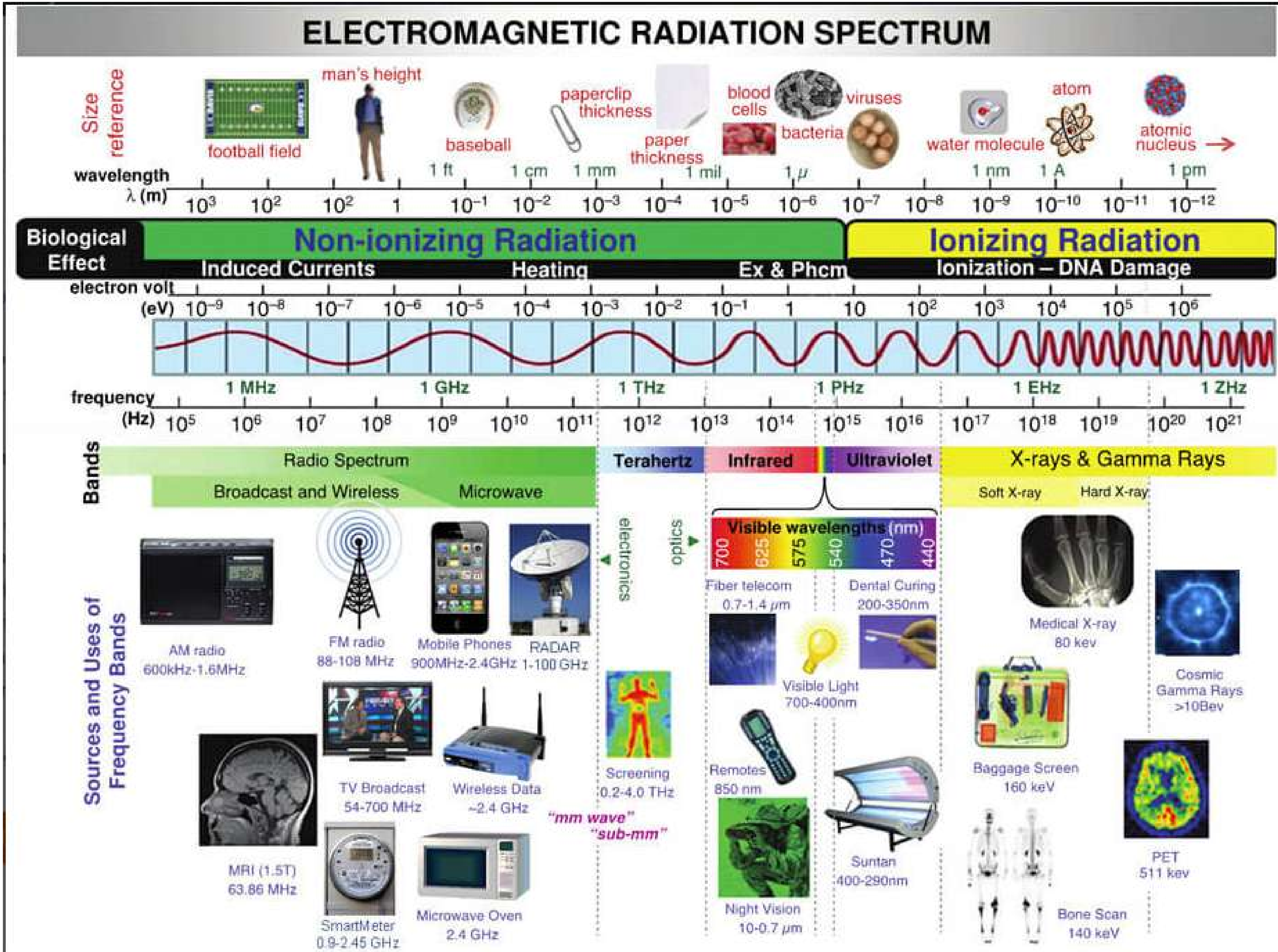
The three highlighted 5k resistors shown in figure are the reason why this IC is named as 555.



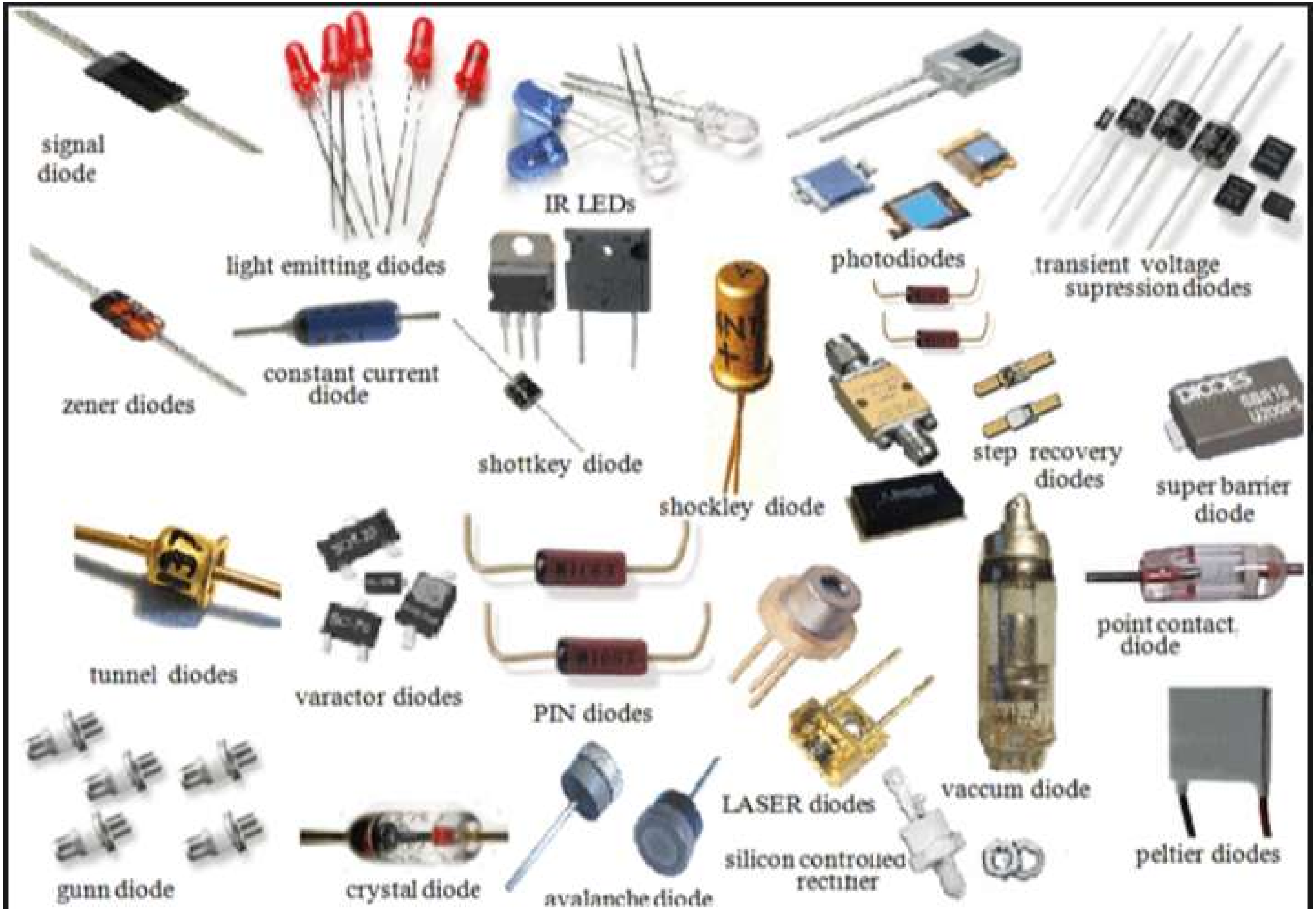
Please note the notch near first pin. This is made to indentify the first pin of IC.

Pin	Name	Purpose
1	GND	Ground reference voltage, low level (0 V)
2	TRIG	The OUT pin goes high and a timing interval starts when this input falls below 1/2 of CTRL voltage (which is typically 1/3 of V_{CC}, when CTRL is open).
3	OUT	This output is driven to approximately 1.7V below $+V_{CC}$ or GND.
4	RESET	A timing interval may be reset by driving this input to GND, but the timing does not begin again until RESET rises above approximately 0.7 volts. Overrides TRIG which overrides THR.
5	CTRL	Provides "control" access to the internal voltage divider (by default, 2/3 V_{CC}).
6	THR	The timing (OUT high) interval ends when the voltage at THR is greater than that at CTRL.
7	DIS	Open collector output which may discharge a capacitor between intervals. In phase with output.
8	V_{cc}	Positive supply voltage, which is usually between 3 and 15 V depending on the variation.

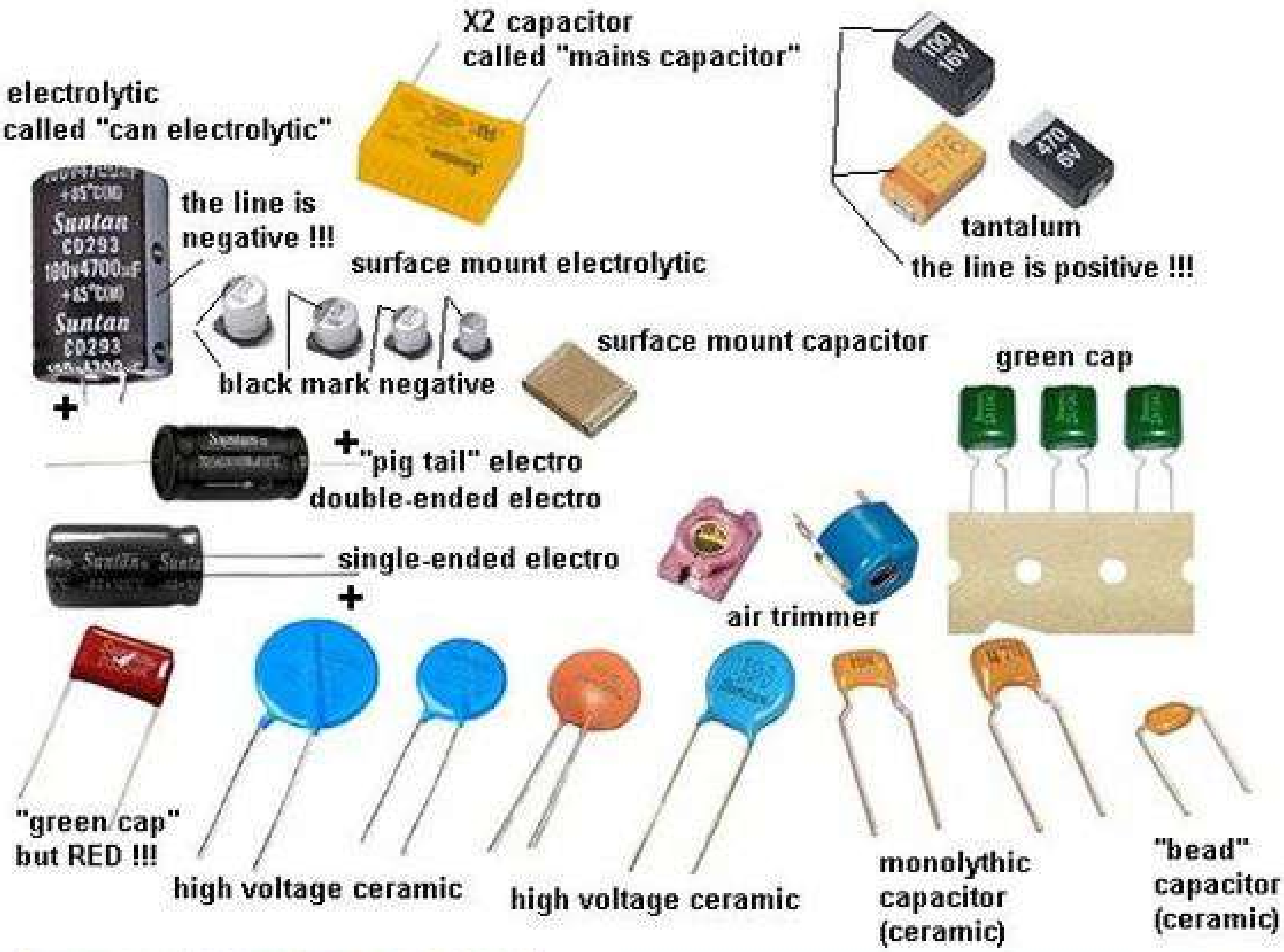

120 ohm 5%
1st
2nd
3rd
Multiplier
Tolerance
0 Black Black Black Black 1
1 Brown Brown Brown Brown 10¹ Brown 1%
2 Red Red Red Red 10² Red 2%
3 Orange Orange Orange Orange 10³
4 Yellow Yellow Yellow Yellow 10⁴
5 Green Green Green Green 10⁵
6 Blue Blue Blue Blue 10⁶
7 Violet Violet Violet Violet 10⁷
8 Grey Grey Grey Grey 10⁸
9 White White White White 10⁹
Gold 0.1 Gold 5%
Silver 0.01 Silver 10%
1st
2nd
3rd
Multiplier
Tolerance
4.7k ohm 1%

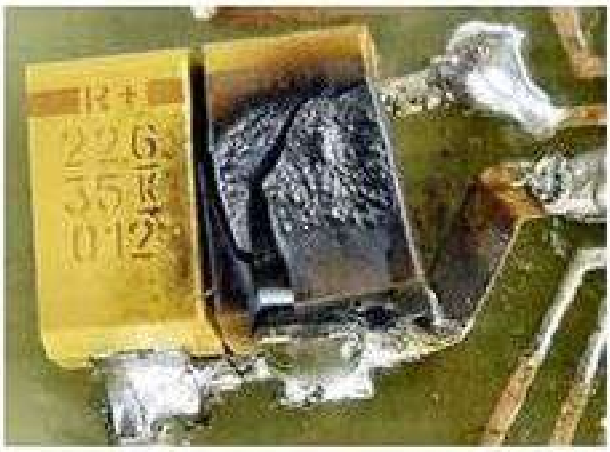


ELECTROMAGNETIC RADIATION SPECTRUM
Size reference
football field
man's height
baseball
paperclip thickness
paper thickness
blood cells
bacteria
viruses
water molecule
atom
atomic nucleus
wavelength λ (m)
1 ft
1 cm
1 mm
1 mil
1 μ
1 nm
1 A
1 pm
10^3 10^2 10^2 1 10^{-1} 10^{-2} 10^{-3} 10^{-4} 10^{-5} 10^{-6} 10^{-7} 10^{-8} 10^{-9} 10^{-10} 10^{-11} 10^{-12}
Biological Effect
Non-ionizing Radiation
Ionizing Radiation
Induced Currents
Heating
Ex & Phcm
Ionization – DNA Damage
electron volt (eV)
10^{-9} 10^{-8} 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 1 10 10^2 10^3 10^4 10^5 10^6
frequency (Hz)
1 MHz
1 GHz
1 THz
1 PHz
1 EHz
1 ZHz
10^5 10^6 10^7 10^8 10^9 10^{10} 10^{11} 10^{12} 10^{13} 10^{14} 10^{15} 10^{16} 10^{17} 10^{18} 10^{19} 10^{20} 10^{21}
Bands
Radio Spectrum
Broadcast and Wireless
Microwave
Terahertz
Infrared
Ultraviolet
X-rays & Gamma Rays
Soft X-ray
Hard X-ray
electronics
optics
Visible wavelengths (nm)
700 625 575 540 470 440
Sources and Uses of Frequency Bands
AM radio 600kHz-1.6MHz
FM radio 88-108 MHz
Mobile Phones 900MHz-2.4GHz
RADAR 1-100 GHz
MRI (1.5T) 63.86 MHz
TV Broadcast 54-700 MHz
Wireless Data ~2.4 GHz
SmartMeter 0.9-2.45 GHz
Microwave Oven 2.4 GHz
"mm wave"
"sub-mm"
Screening 0.2-4.0 THz
Fiber telecom 0.7-1.4 μm
Dental Curing 200-350nm
Visible Light 700-400nm
Remotes 850 nm
Night Vision 10-0.7 μm
Suntan 400-290nm
Medical X-ray 80 kev
Baggage Screen 160 keV
Bone Scan 140 keV
Cosmic Gamma Rays >10Bev
PET 511 kev



Types of Diode

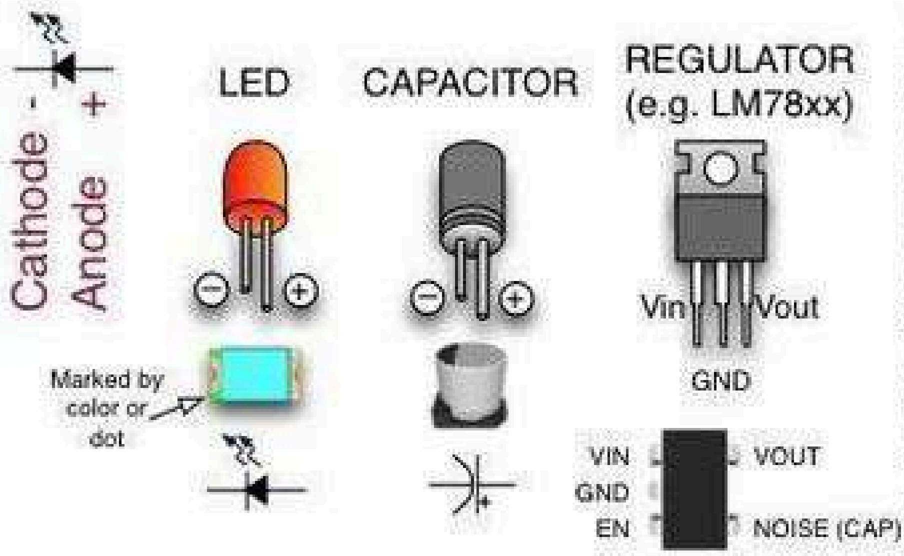




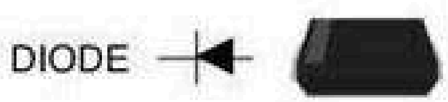
tantalum capacitors can
"go up in smoke"

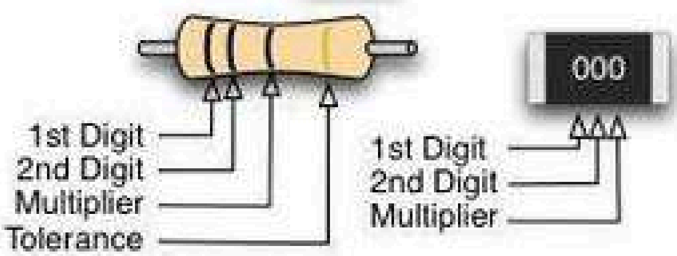
"bead" tantalum

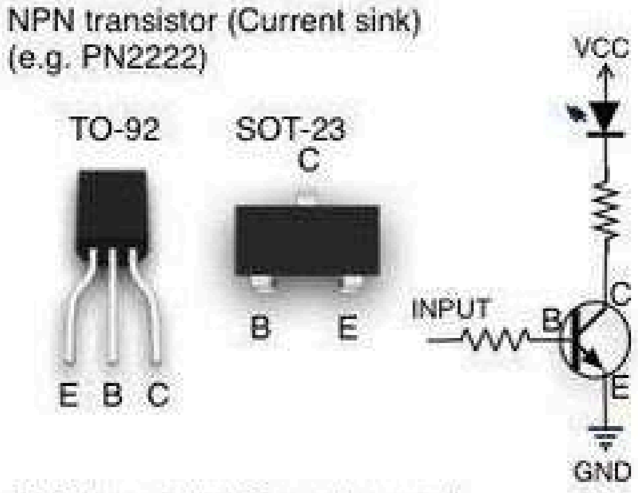
Electronics Reference Sheet v1.1b

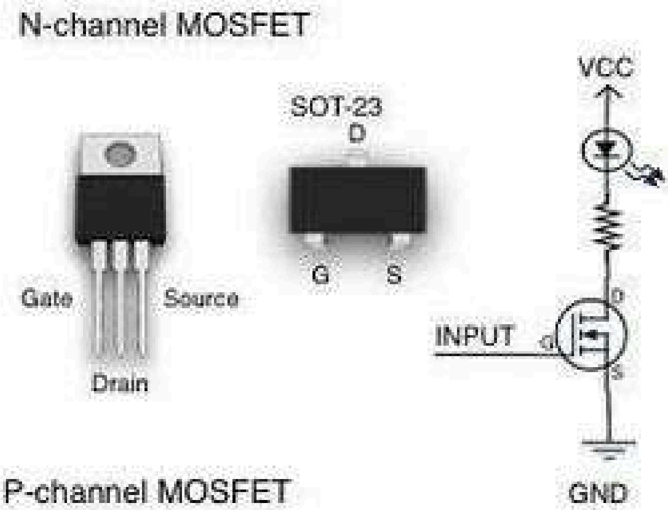


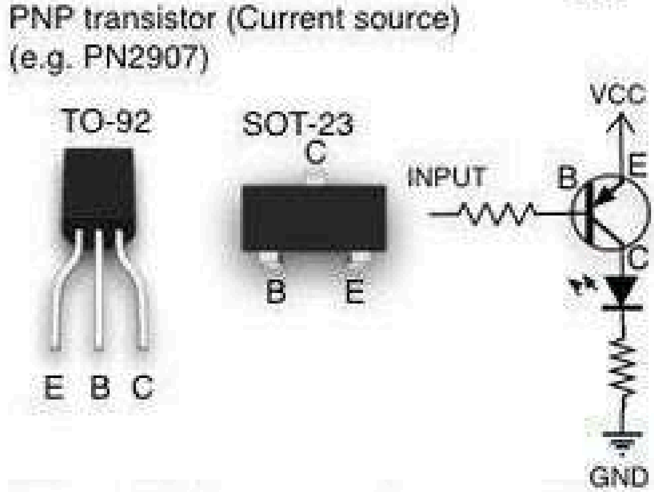
Resistor	Digit	Multiplier	Tolerance
Silver	-	0.01	±10%
Gold	-	0.1	±5%
Black	0	1	-
Brown	1	10	±1%
Red	2	100	±2%
Orange	3	1k	-
Yellow	4	10k	-
Green	5	100k	±0.5%
Blue	6	1M	±0.25%
Violet	7	10M	±0.1%
Gray	8	-	-
White	9	-	-

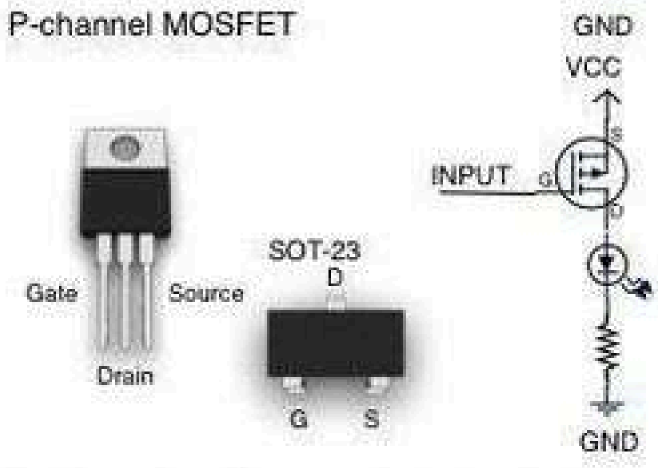




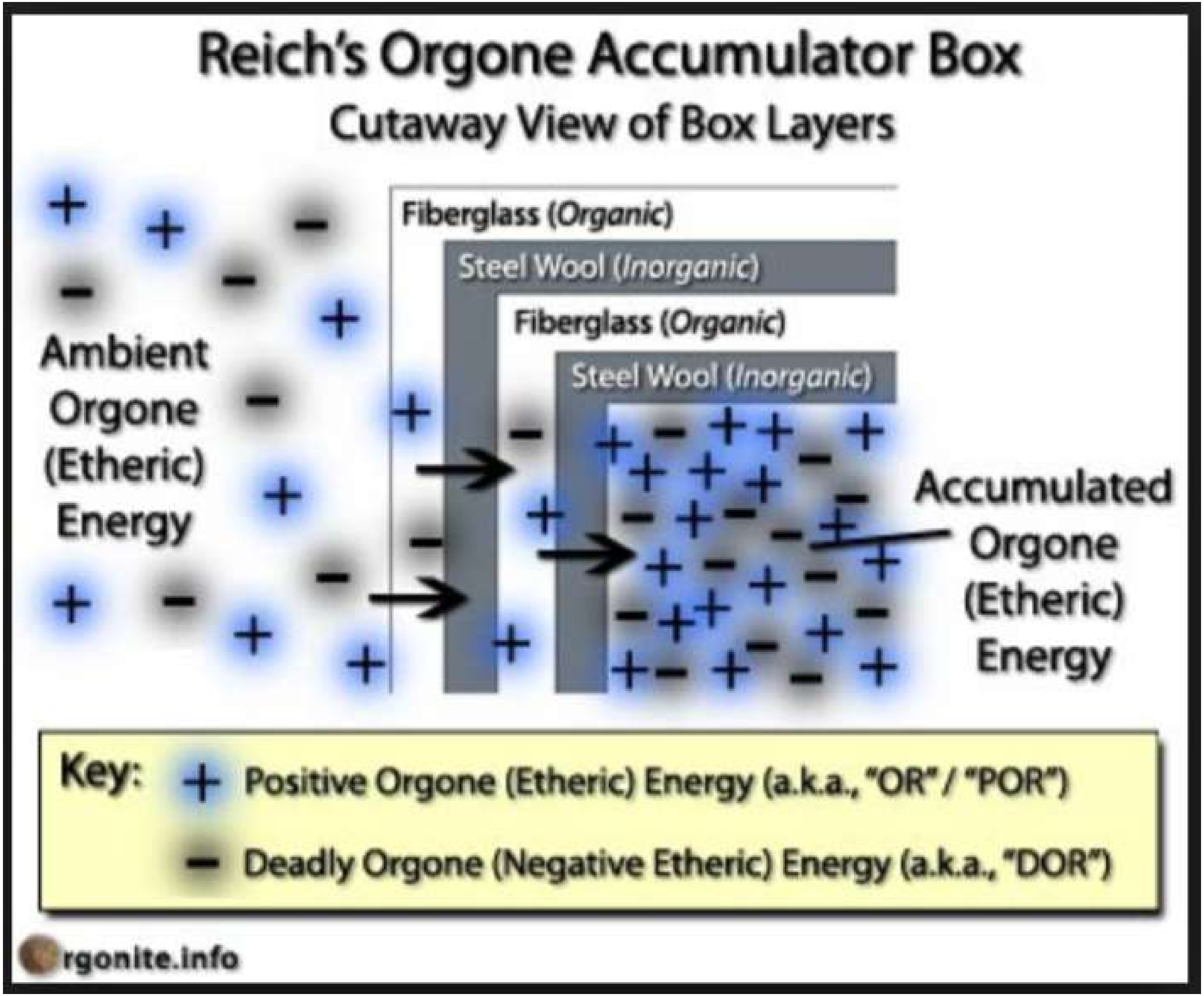








* Please note that some components may have a different pinout than the one showed above, you should always check the data sheet before using a new component.


Reich's Orgone Accumulator Box
Cutaway View of Box Layers
Fiberglass (Organic)
Steel Wool (Inorganic)
Fiberglass (Organic)
Steel Wool (Inorganic)
Ambient Orgone (Etheric) Energy
Accumulated Orgone (Etheric) Energy
Key:
+ Positive Orgone (Etheric) Energy (a.k.a., "OR" / "POR")
− Deadly Orgone (Negative Etheric) Energy (a.k.a., "DOR")
rgonite.info

How to build a Don Croft ORGONITE CLOUD BUSTER

Materials List:

Wear safety gear as necessary
- respirator, gloves when pouring resin.
- gloves & goggles when cutting wood - with a respirator if cutting MDF etc.

4 x 10' lengths of copper (or other) pipe (cut 3 lengths in half, and one length into six 1' pieces)

6 pipe endcaps and 6 pipe connectors

2 gallon bucket (polypropylene if possible)

10 double terminated quartz (6 of these must fit into garden hose for insertion into base of pipes)

6 pieces of garden hose (3/4" - 1" long)

Resin and metal suitable for orgonite

A roll of tape (duct tape etc)

Glue (silicone glue will work)

Stick for mixing metal into resin when pouring layers

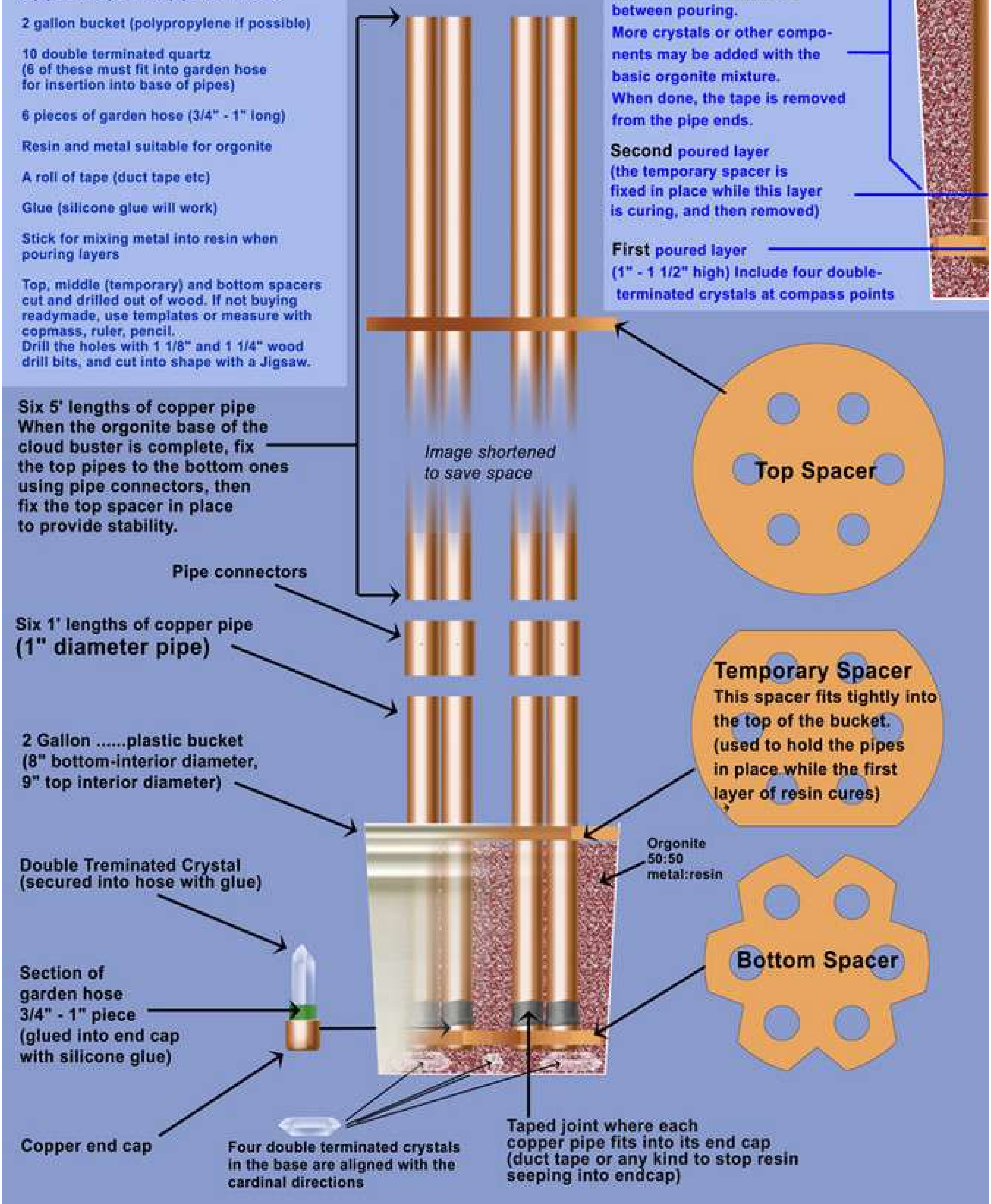
Top, middle (temporary) and bottom spacers cut and drilled out of wood. If not buying readymade, use templates or measure with copmass, ruler, pencil.
Drill the holes with 1 1/8" and 1 1/4" wood drill bits, and cut into shape with a Jigsaw.

Refer to (Part 1 - 2) How to Make an Orgonite CloudBuster:
http://www.youtube.com/watch?v=cCn1DO2Rj6k

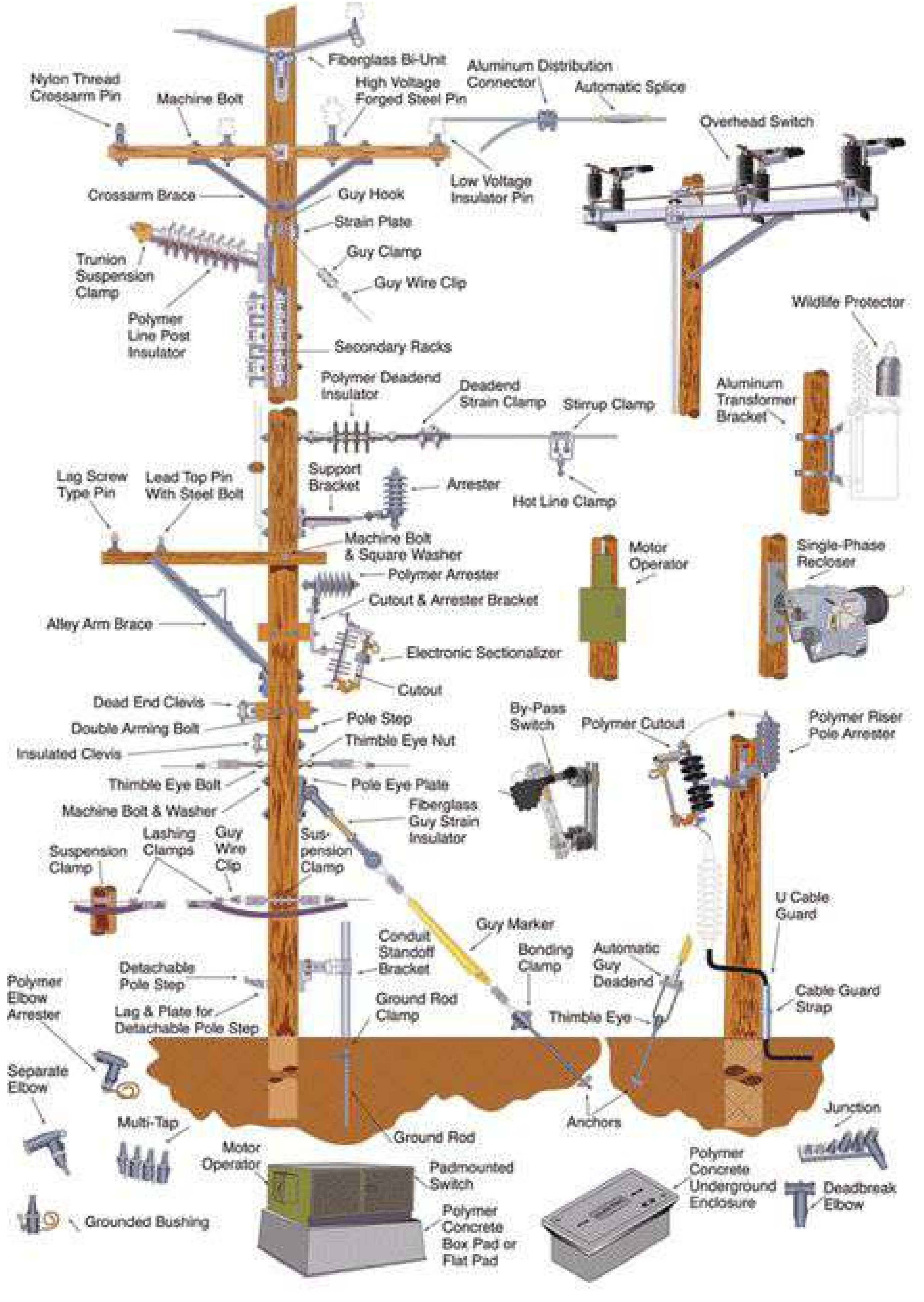
Third - The temporary spacer is removed and the pipe-tops are taped up to stop resin or metal getting into them.
Further layers are poured, allowing resin to cure and cool between pouring.
More crystals or other components may be added with the basic orgonite mixture.
When done, the tape is removed from the pipe ends.

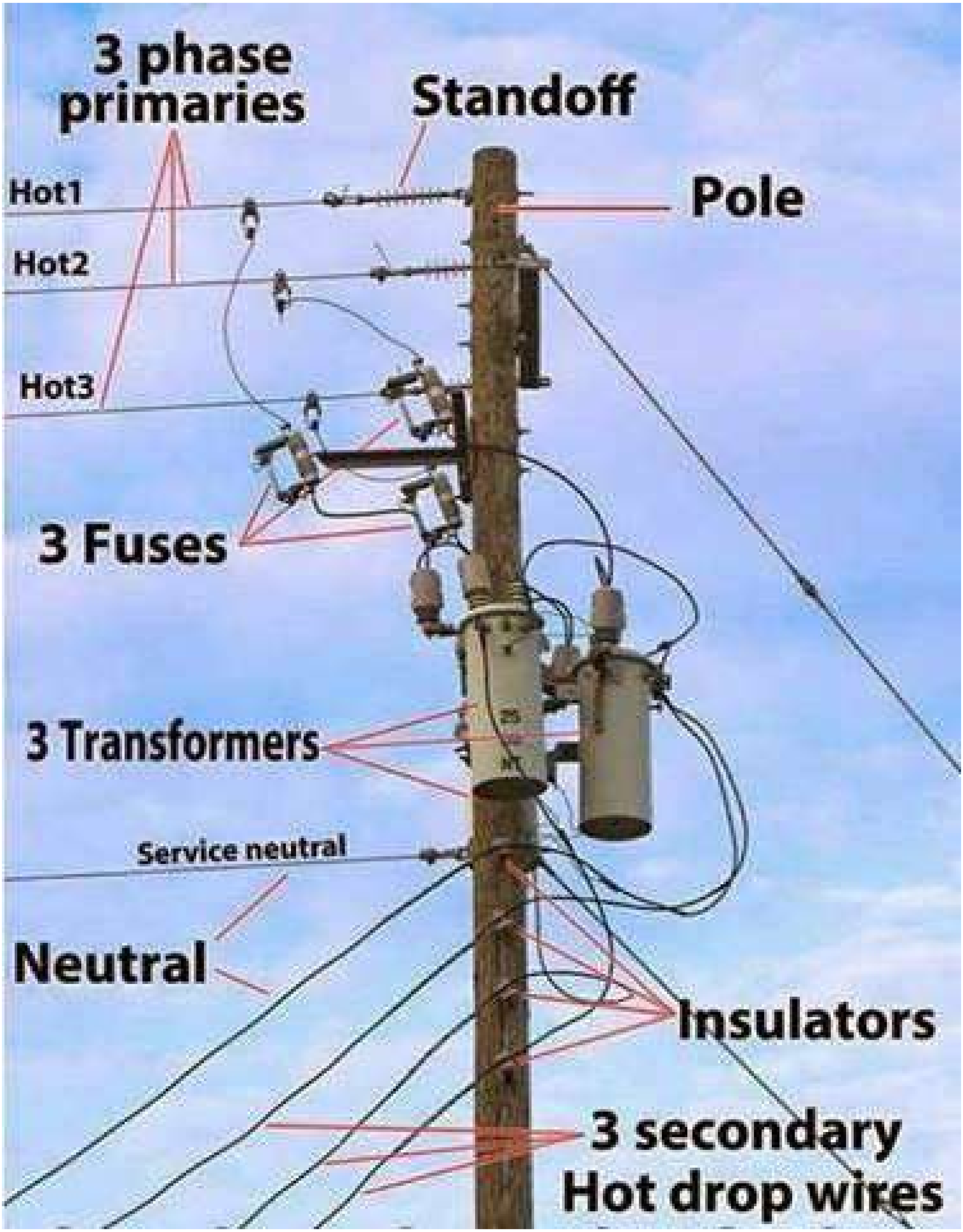
Second poured layer (the temporary spacer is fixed in place while this layer is curing, and then removed)

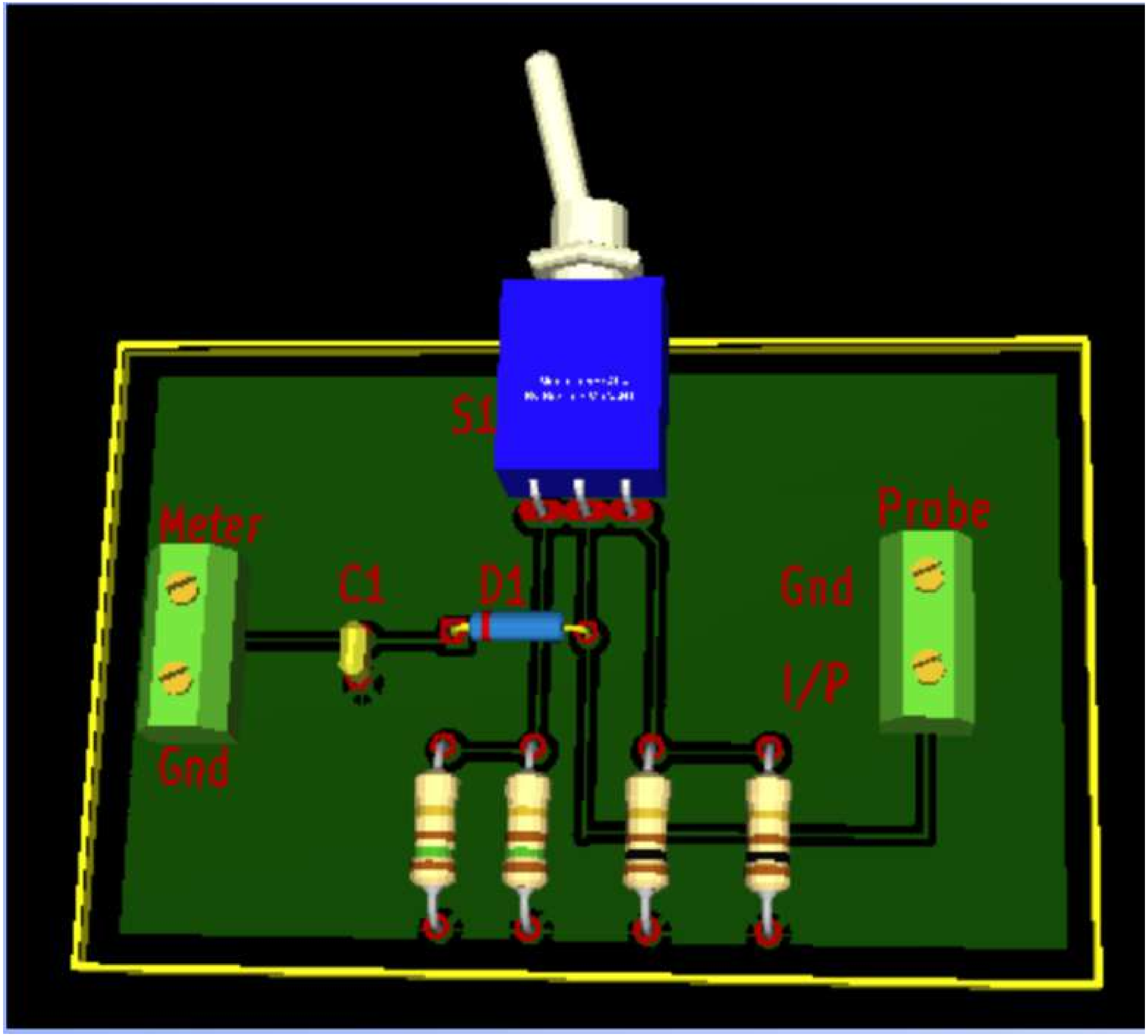
First poured layer (1" - 1 1/2" high) Include four double-terminated crystals at compass points

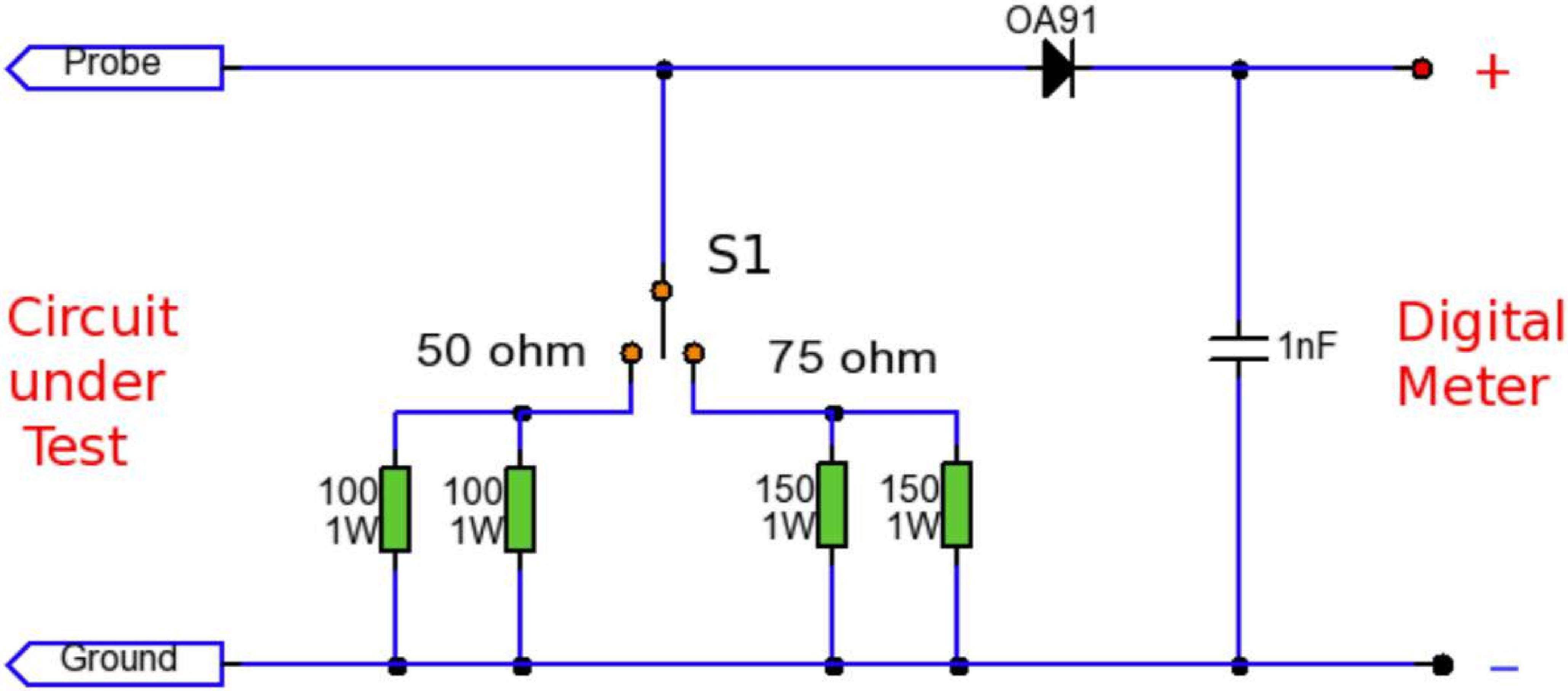


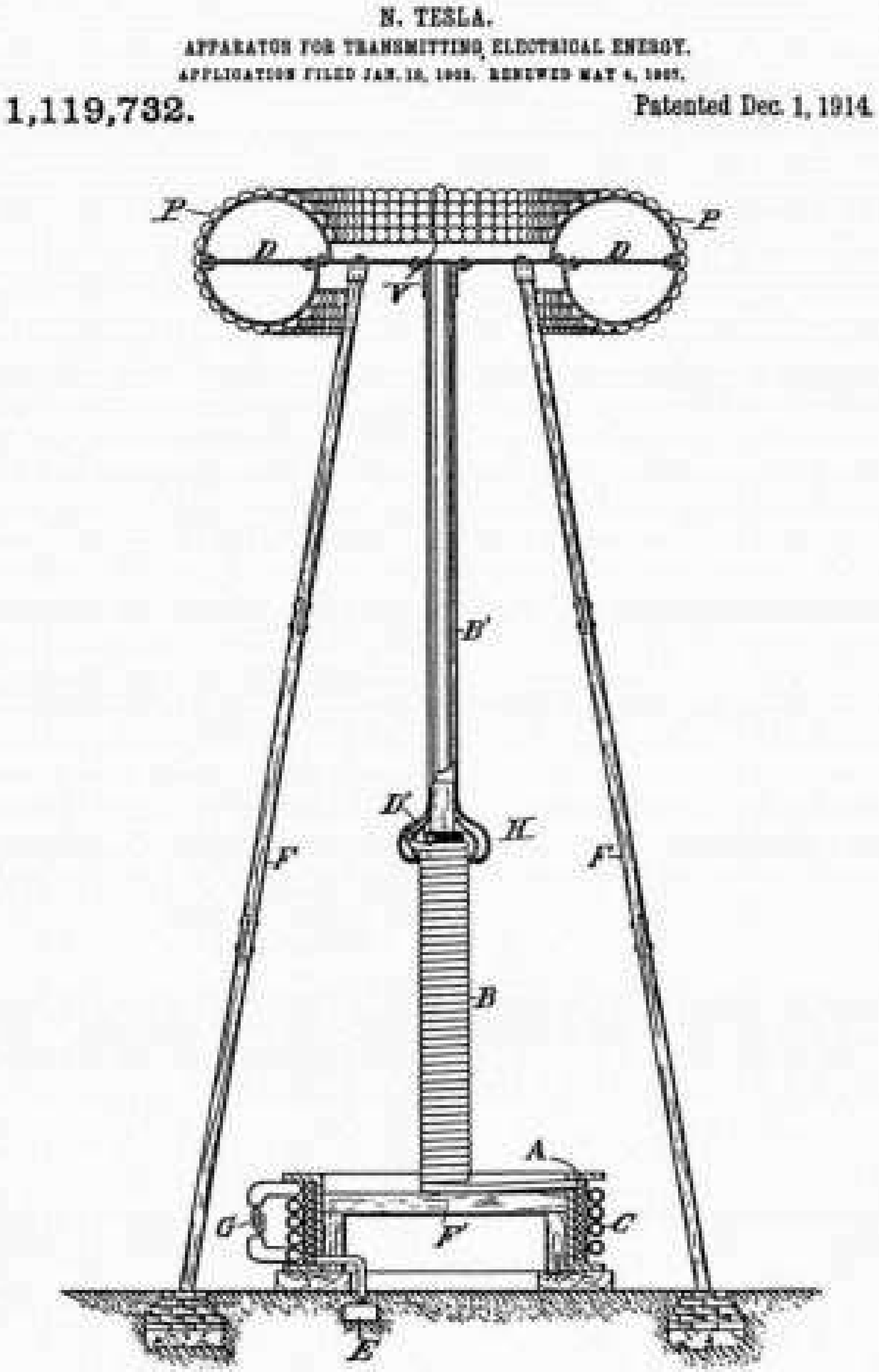

BOAT
BOAT
GOOP

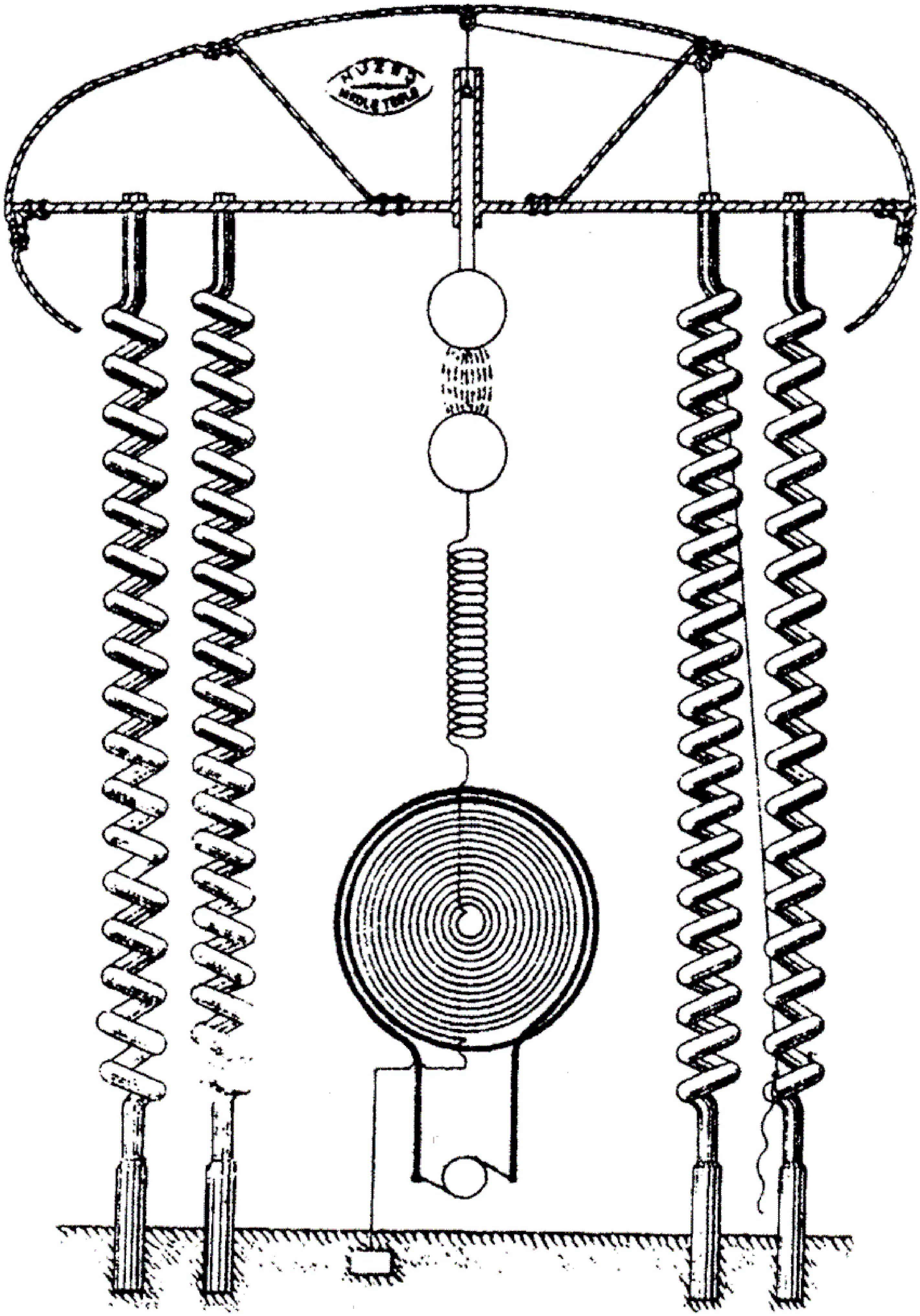

Fiberglass Bi-Unit
Aluminum Distribution Connector
Automatic Splice
Nylon Thread Crossarm Pin
Machine Bolt
High Voltage Forged Steel Pin
Overhead Switch
Low Voltage Insulator Pin
Crossarm Brace
Guy Hook
Strain Plate
Trunion Suspension Clamp
Guy Clamp
Guy Wire Clip
Polymer Line Post Insulator
Secondary Racks
Wildlife Protector
Polymer Deadend Insulator
Deadend Strain Clamp
Stirrup Clamp
Aluminum Transformer Bracket
Lag Screw Type Pin
Lead Top Pin With Steel Bolt
Support Bracket
Arrester
Hot Line Clamp
Machine Bolt & Square Washer
Motor Operator
Single-Phase Recloser
Polymer Arrester
Cutout & Arrester Bracket
Alley Arm Brace
Electronic Sectionalizer
Cutout
Dead End Clevis
By-Pass Switch
Polymer Cutout
Polymer Riser Pole Arrester
Double Arming Bolt
Pole Step
Thimble Eye Nut
Insulated Clevis
Thimble Eye Bolt
Pole Eye Plate
Machine Bolt & Washer
Fiberglass Guy Strain Insulator
Suspension Clamp
Lashing Clamps
Guy Wire Clip
Sus-pension Clamp
U Cable Guard
Guy Marker
Conduit Standoff Bracket
Bonding Clamp
Automatic Guy Deadend
Detachable Pole Step
Polymer Elbow Arrester
Cable Guard Strap
Lag & Plate for Detachable Pole Step
Ground Rod Clamp
Thimble Eye
Separate Elbow
Anchors
Junction
Multi-Tap
Ground Rod
Motor Operator
Padmounted Switch
Polymer Concrete Underground Enclosure
Deadbreak Elbow
Grounded Bushing
Polymer Concrete Box Pad or Flat Pad


3 phase primaries
Standoff
Pole
Hot1
Hot2
Hot3
3 Fuses
3 Transformers
Service neutral
Neutral
Insulators
3 secondary Hot drop wires


S1
Meter
C1
D1
Probe
Gnd
I/P
Gnd


Probe
Ground
OA91
+
−
S1
50 ohm
75 ohm
100
1W
100
1W
150
1W
150
1W
1nF
Circuit
under
Test
Digital
Meter


N. TESLA.
APPARATUS FOR TRANSMITTING ELECTRICAL ENERGY.
APPLICATION FILED JAN. 18, 1902. RENEWED MAY 4, 1907.
1,119,732.
Patented Dec. 1, 1914.
P
D
V
E'
H
F
B
A
G
C
E



New York, Aug. 30th, 1901
46 & 48 East Houston Str.

Mr. Stanford White
160 Fifth Ave.
New York City

My Dear Stanford:
Many thanks for your suggestions. I am writing to Mr. Powell today. Perhaps he will be able to clear the land altogether.

I want you to understand that I went to the American Bridge Company simply because of my anxiety to have the work pushed through as fast as practicable. I am only too glad to follow your advice and beg you to consider yourself absolutely free in your choice and arrangements regarding this work.

Yours very sincerely,
N. Tesla

New York, Sep. 12th, 1901
46 & 48 East Houston Str.

Babcock & Wilcox Co.
85 Liberty Street
New York City

Gentlemen:
Under enclosure I forward sketch showing your two boilers as they will be placed in my building and their position relative to and exact distance from the chimney. The scale is ½ inch to a foot.

You will greatly oblige me by furnishing the drawings of the flues leading to the chimney and the position of the breech, as the builder cannot proceed without this information.

Yours very truly,
Encl.

Anyone familiar with the Wardenclyffe Tower knows it to have been a colossal structure. Yet, few realize that it was supposed to have been even larger. Although the exact figures are not revealed, Tesla must have drastically underestimated the cost of building his structure as is evidenced by the following response to White.

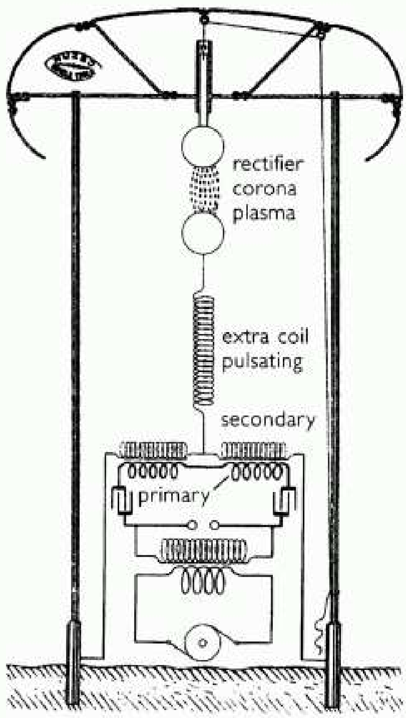


Fig. 5 Oscillating statically charged terminal.

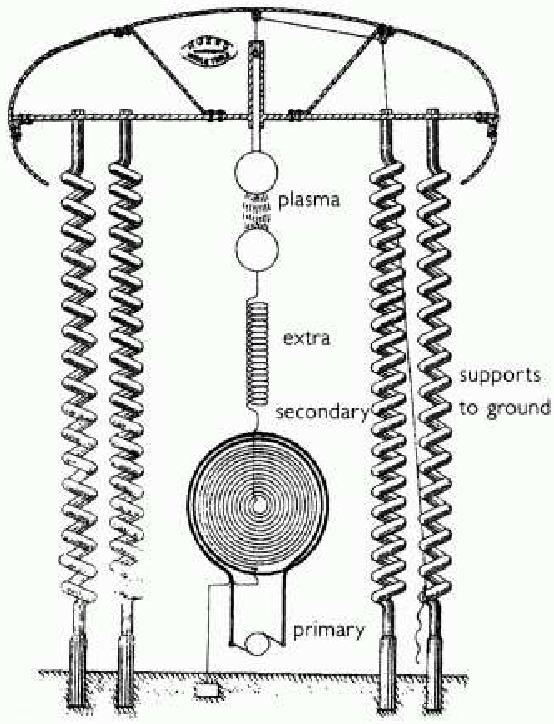


Fig. 6 Oscillating electrostatically charged dome.

N. TESLA

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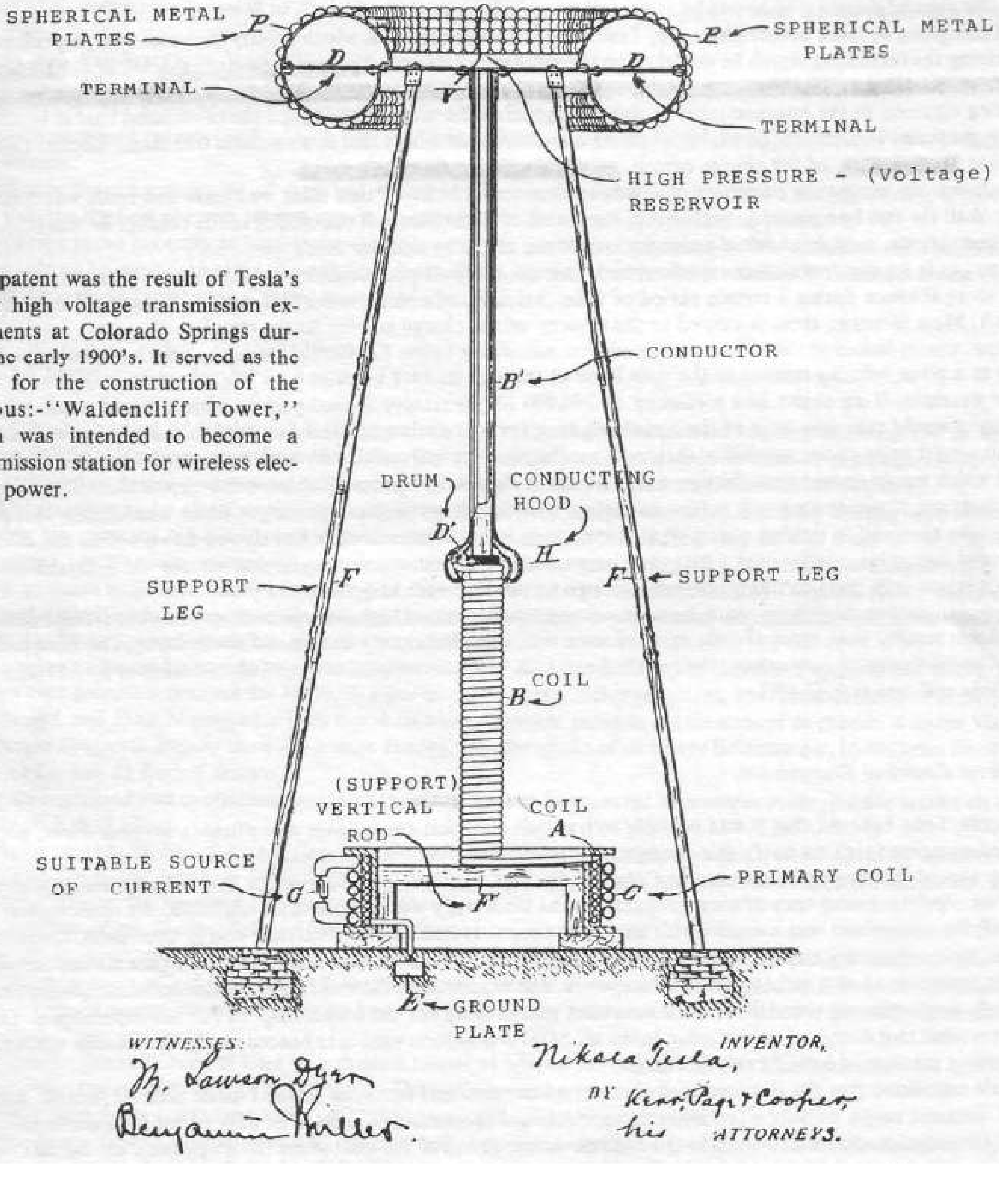
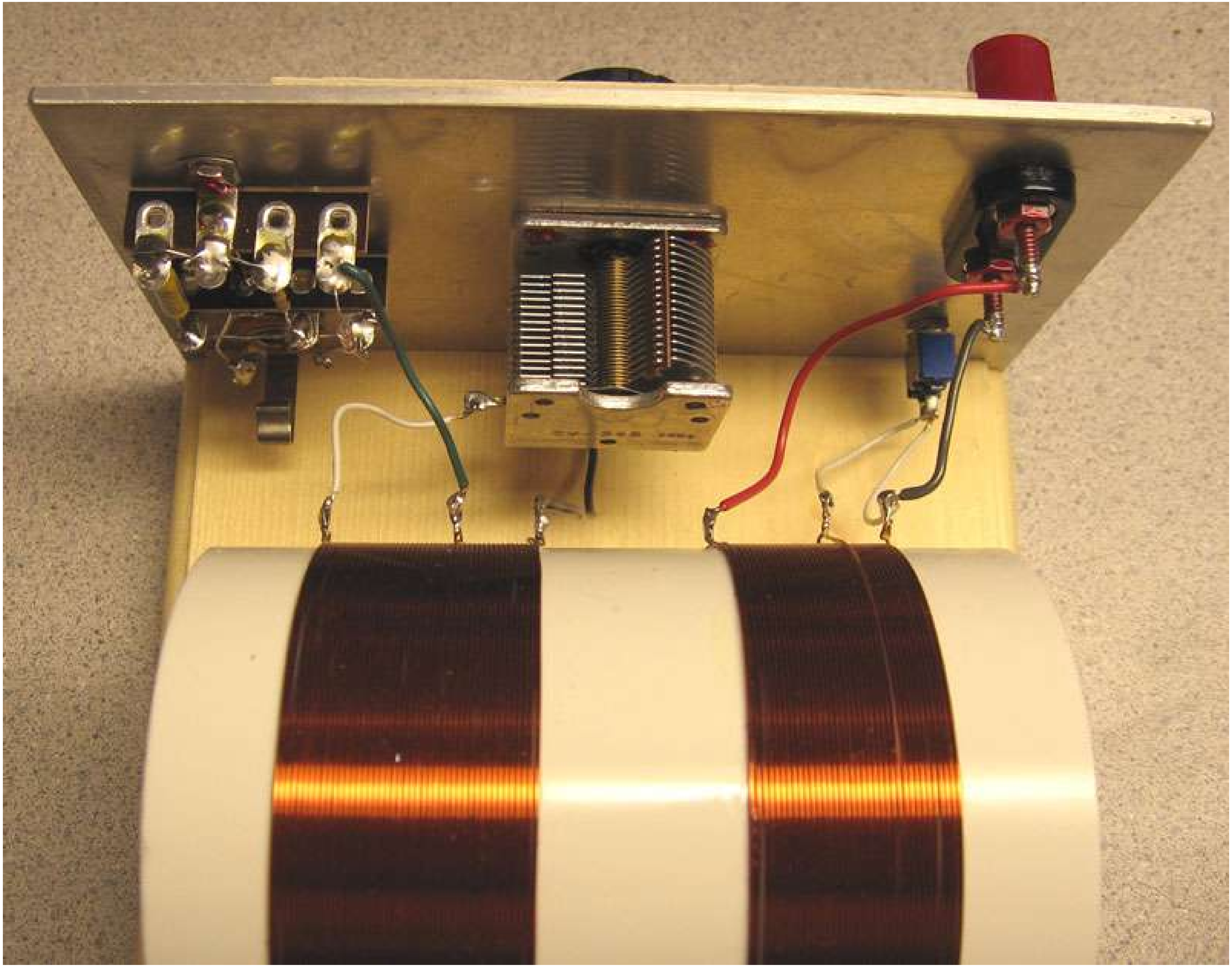


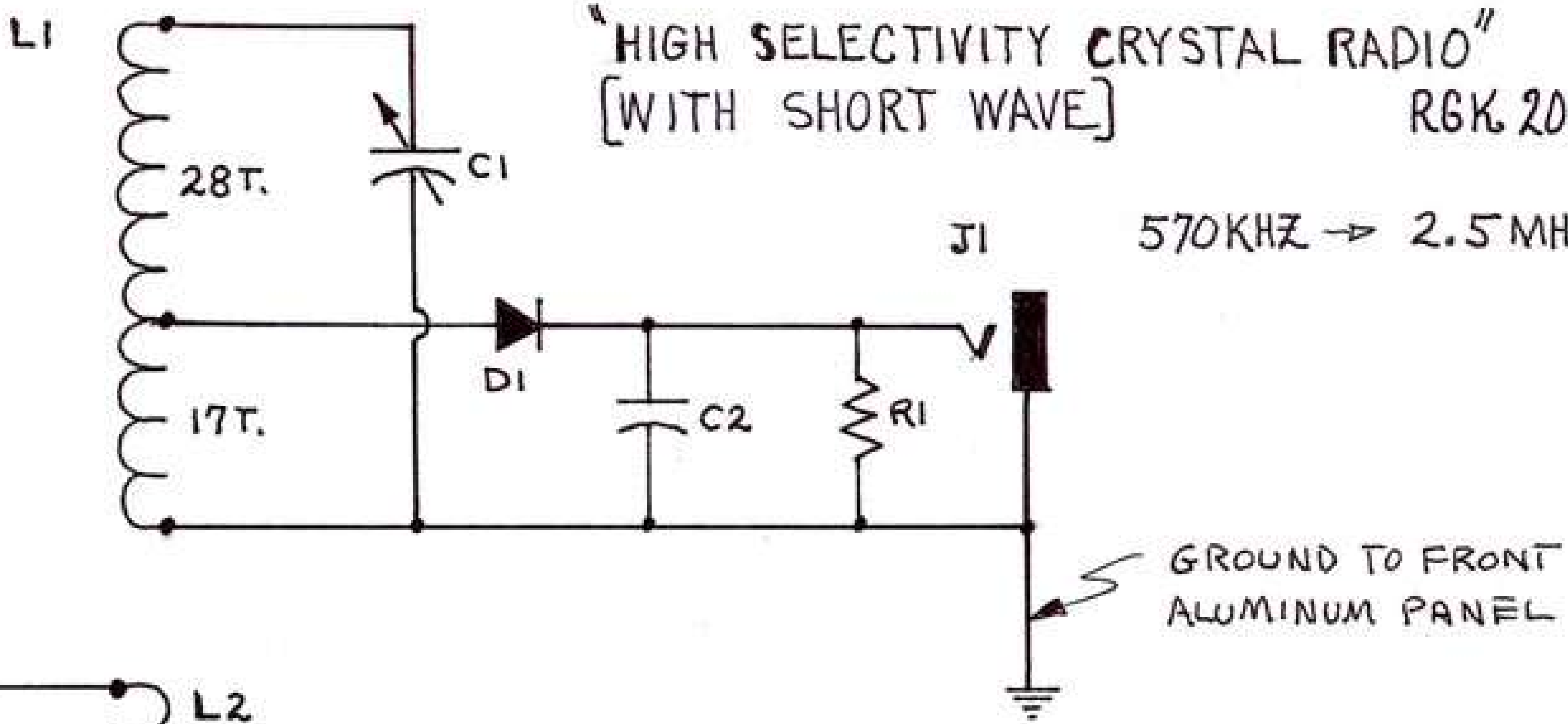
This patent was the result of Tesla's many high voltage transmission experiments at Colorado Springs during the early 1900's. It served as the basis for the construction of the famous:-''Waldencliff Tower,'' which was intended to become a transmission station for wireless electrical power.

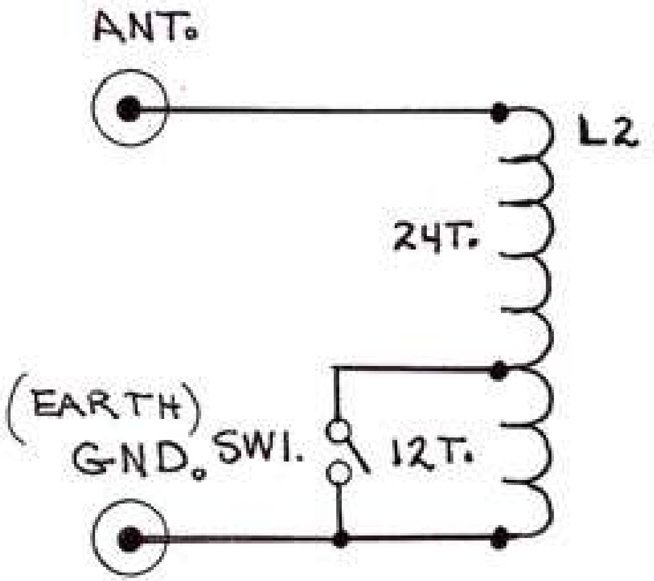


"HIGH SELECTIVITY CRYSTAL RADIO"
[WITH SHORT WAVE]

RGK 2007

570KHZ → 2.5MHZ





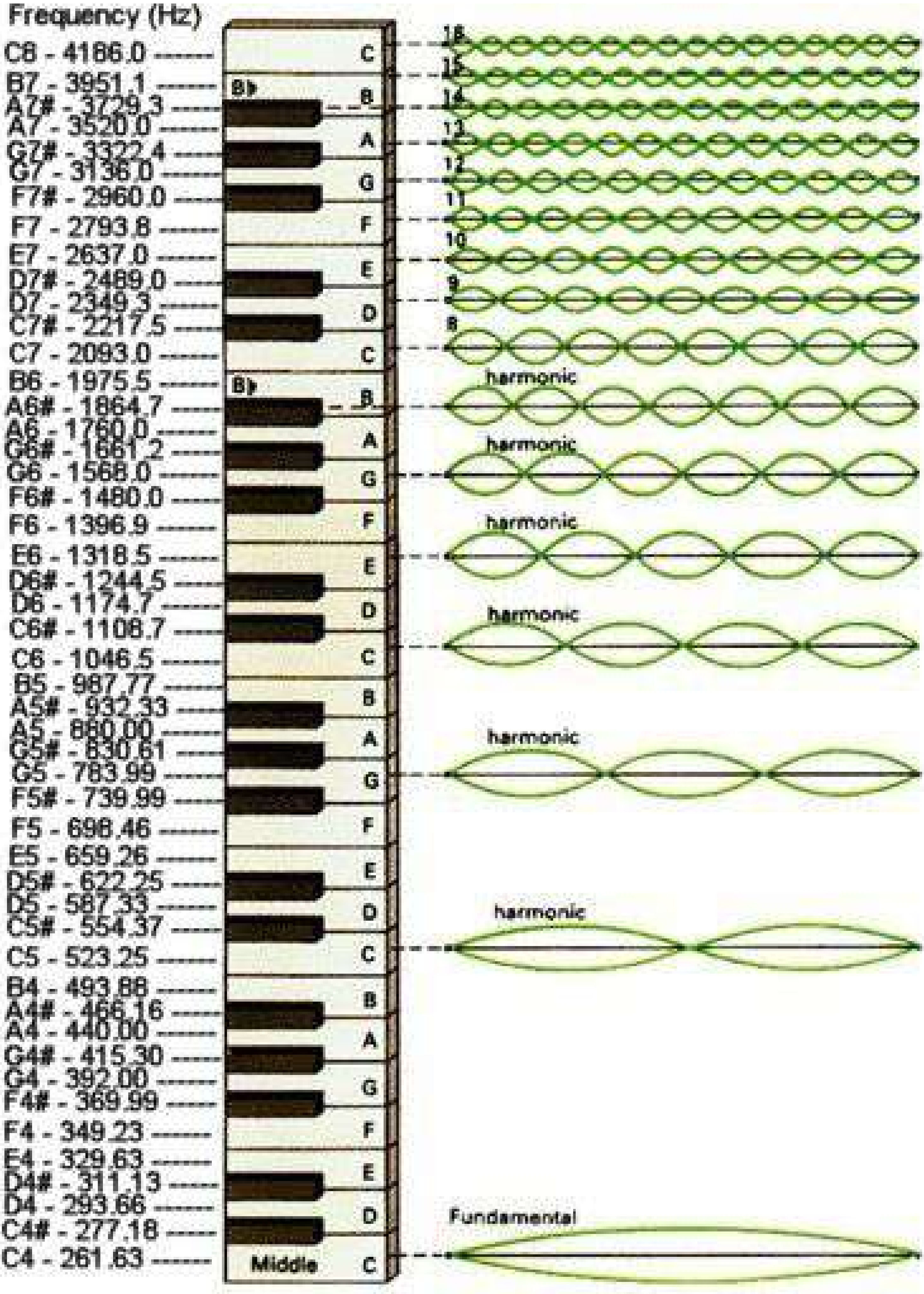
L1 & L2 = #22 ENAM. WIRE ON 3" PVC PIPE.
(PIPE IS ACTUALLY 3¼" DIAM")
D1 = 1N34 OR OA47 GERMANIUM DIODE
C1 = 365 PF. VARIABLE CAPACITOR / THESE USUALY TUNE FROM 15 → 400 PF.
C2 = .0047 μF
R1 = 47K Ω ¼ OR ½ WATT. / J1 = ¼" AUDIO JACK

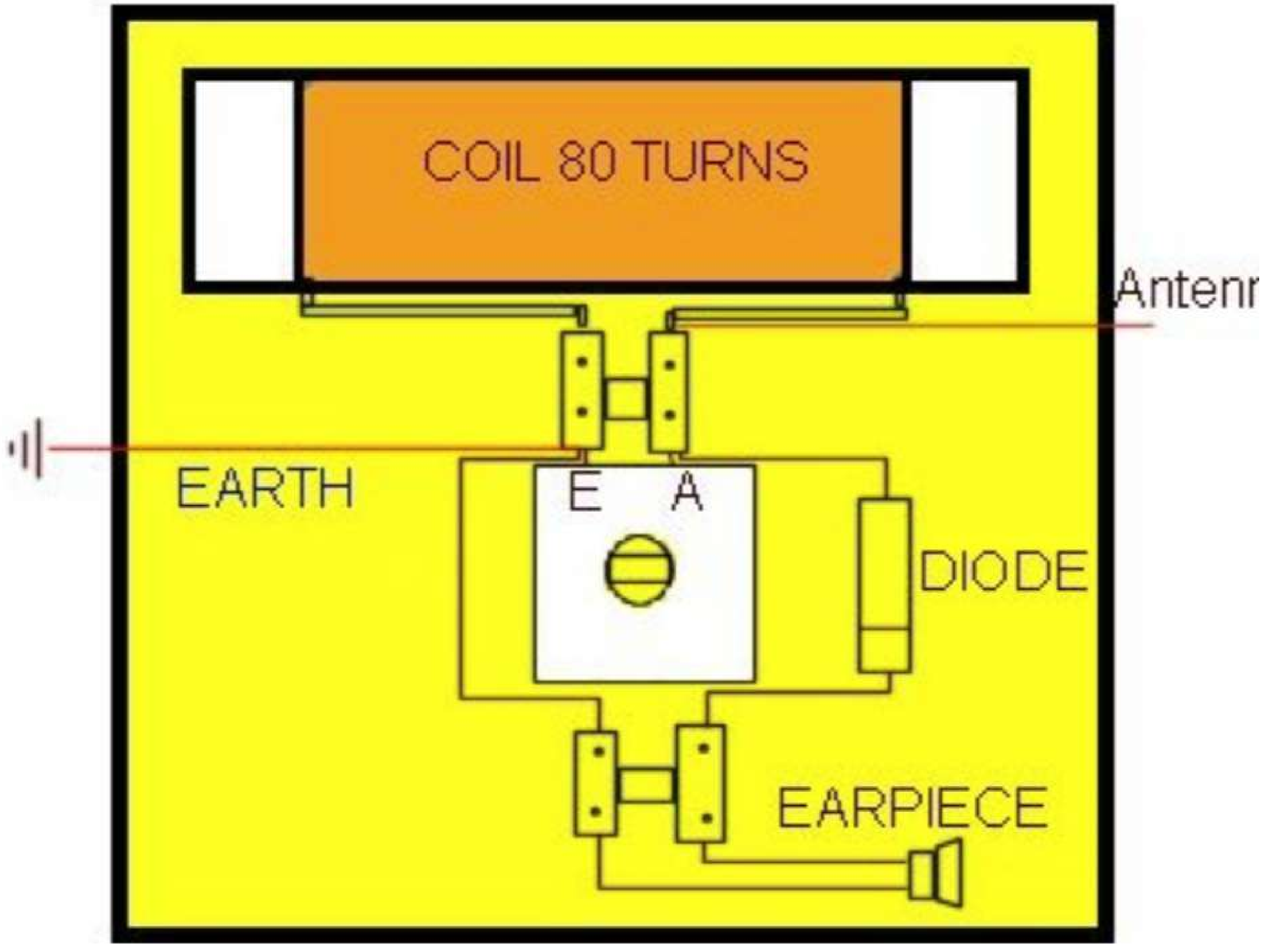
[L1/L2 NOTES: L1 = 45 TURNS TOTAL & L2 = 36 TURNS TOTAL. THE SPACE BETWEEN L1 & L2 IS 1 1/16".]

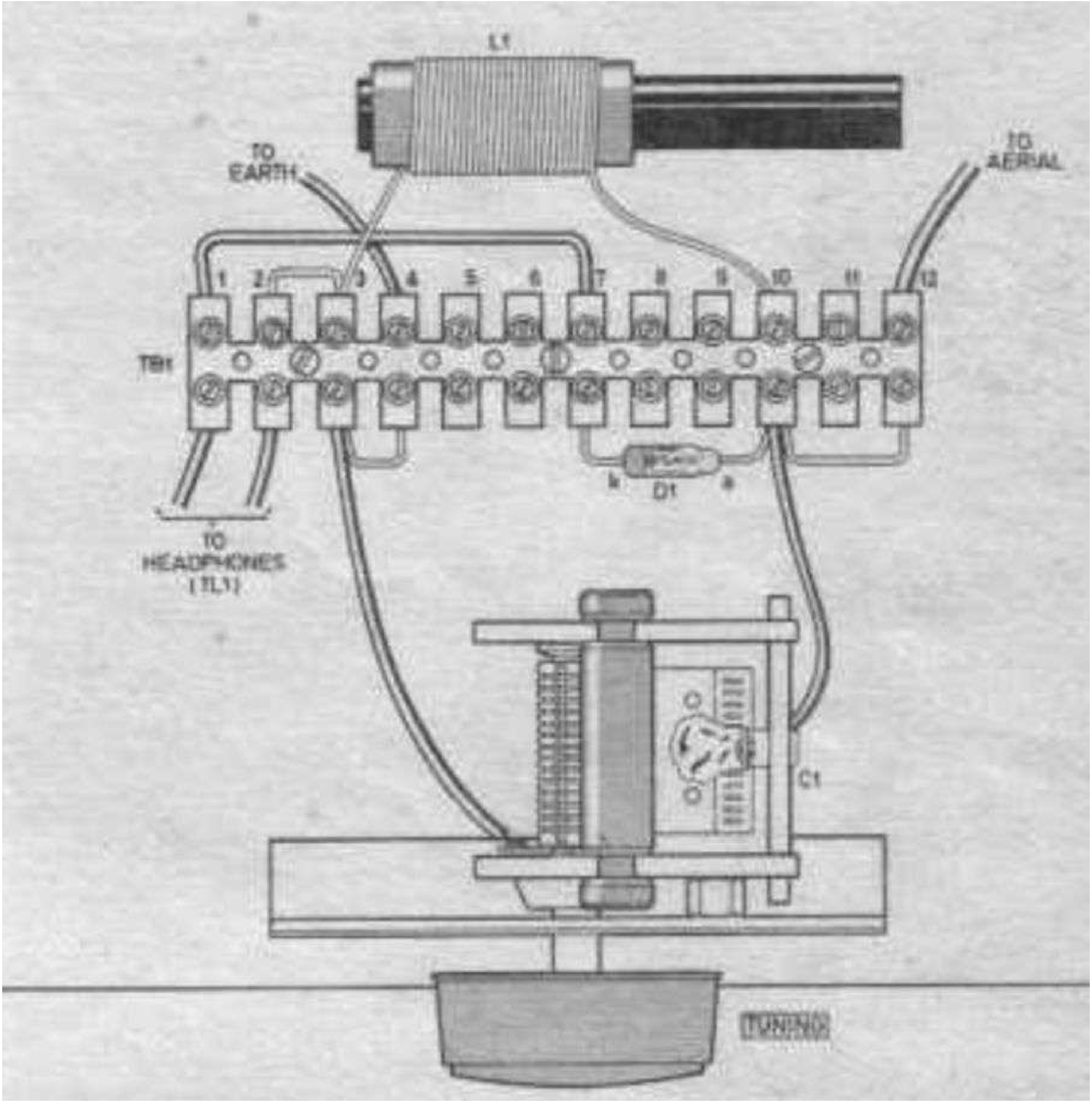
SW1 = SPST. SWITCH / FOR ANTENNA MATCHING


630V 0245
150M


EXTENDED DAY CREED
WATCH YOUR THOUGHTS THEY BECOME YOUR WORDS,
WATCH YOUR WORDS THEY BECOME YOUR FEELINGS,
WATCH YOUR FEELINGS THEY BECOME YOUR ACTIONS,
WATCH YOUR ACTIONS THEY BECOME YOUR HABITS,
WATCH YOUR HABITS THEY BECOME YOUR LIFESTYLE,
WATCH YOUR LIFESTYLE IT CONTROLS YOUR DESTINY.
05/07/2013 04:26 PM


Frequency (Hz)
C8 - 4186.0
B7 - 3951.1
A7# - 3729.3
A7 - 3520.0
G7# - 3322.4
G7 - 3136.0
F7# - 2960.0
F7 - 2793.8
E7 - 2637.0
D7# - 2489.0
D7 - 2349.3
C7# - 2217.5
C7 - 2093.0
B6 - 1975.5
A6# - 1864.7
A6 - 1760.0
G6# - 1661.2
G6 - 1568.0
F6# - 1480.0
F6 - 1396.9
E6 - 1318.5
D6# - 1244.5
D6 - 1174.7
C6# - 1108.7
C6 - 1046.5
B5 - 987.77
A5# - 932.33
A5 - 880.00
G5# - 830.61
G5 - 783.99
F5# - 739.99
F5 - 698.46
E5 - 659.26
D5# - 622.25
D5 - 587.33
C5# - 554.37
C5 - 523.25
B4 - 493.88
A4# - 466.16
A4 - 440.00
G4# - 415.30
G4 - 392.00
F4# - 369.99
F4 - 349.23
E4 - 329.63
D4# - 311.13
D4 - 293.66
C4# - 277.18
C4 - 261.63
Middle
16
15
14
13
12
11
10
9
8
harmonic
harmonic
harmonic
harmonic
harmonic
harmonic
Fundamental


COIL 80 TURNS
Antenn
EARTH
E
A
DIODE
EARPIECE



L1
TO
EARTH
TO
AERIAL
1
2
3
4
5
6
7
8
9
10
11
12
TB1
k
D1
a
TO
HEADPHONES
(TL1)
C1
TUNING